

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

**Amendment No. 1
to
FORM S-1
REGISTRATION STATEMENT
Under
The Securities Act of 1933**

VIGIL NEUROSCIENCE, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

2836
(Primary Standard Industrial
Classification Code Number)

85-1880494
(I.R.S. Employer
Identification Number)

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(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer
Non-Accelerated Filer

Accelerated Filer
Smaller Reporting Company
Emerging Growth Company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee(3)
Common Stock, par value \$0.0001 per share	8,050,000	\$17.00	\$136,850,000	\$12,686

(1) Includes 1,050,000 shares that the underwriters have the option to purchase.

(2) Estimated solely for the purpose of computing the registration fee in accordance with Rule 457(a) under the Securities Act of 1933, as amended.

(3) Calculated pursuant to Rule 457(a) under the Securities Act of 1933, as amended. \$9,270 of this registration fee was previously paid by the Registrant in connection with the filing of its Registration Statement on Form S-1 on November 19, 2021.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment that specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until this registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

[Table of Contents](#)

The information in this preliminary prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED January 3, 2022
PRELIMINARY PROSPECTUS

7,000,000 Shares



Common Stock

We are offering 7,000,000 shares of our common stock. This is our initial public offering and no public market currently exists for our common stock. We expect the initial public offering price to be between \$15.00 and \$17.00 per share. We have applied to list our common stock on The Nasdaq Global Market under the symbol "VIGL."

We are an "emerging growth company" and "smaller reporting company" as defined under the U.S. federal securities laws and will be subject to reduced public company reporting requirements for this prospectus and future filings. See "Prospectus Summary—Implications of Being an Emerging Growth Company and a Smaller Reporting Company."

Investing in our common stock involves a high degree of risk. Please see "[Risk Factors](#)" beginning on page 13 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	<u>Per share</u>	<u>Total</u>
Initial public offering price		
Underwriting discounts and commissions (1)	\$	\$
Proceeds, before expenses, to us	\$	\$

(1) See "[Underwriting](#)" beginning on page 212 of this prospectus for additional information regarding underwriting compensation.

At our request, the underwriters have reserved up to 5% of common stock offered by this prospectus for sale, at the initial public offering price, to certain individuals identified by us. See "Underwriting—Directed Share Program."

We have granted the underwriters an option for a period of 30 days from the date of this prospectus to purchase an additional 1,050,000 shares of common stock.

The underwriters expect to deliver the shares of common stock against payment in New York, New York on or about _____, 2022.

Morgan Stanley

Jefferies

Stifel

Guggenheim Securities

Prospectus dated _____, 2022.

TABLE OF CONTENTS

PROSPECTUS SUMMARY	1	CERTAIN RELATIONSHIPS AND RELATED PARTY	
THE OFFERING	8	TRANSACTIONS	194
SUMMARY FINANCIAL DATA	11	PRINCIPAL STOCKHOLDERS	198
RISK FACTORS	13	DESCRIPTION OF CAPITAL STOCK	201
SPECIAL NOTE REGARDING FORWARD-LOOKING		SHARES ELIGIBLE FOR FUTURE SALE	206
STATEMENTS	74	CERTAIN MATERIAL U.S. FEDERAL INCOME TAX	
USE OF PROCEEDS	77	CONSIDERATIONS FOR NON-U.S. HOLDERS OF	
DIVIDEND POLICY	79	COMMON STOCK	208
CAPITALIZATION	80	UNDERWRITING	212
DILUTION	82	LEGAL MATTERS	220
MANAGEMENT'S DISCUSSION AND ANALYSIS OF		EXPERTS	220
FINANCIAL CONDITION AND RESULTS OF		WHERE YOU CAN FIND MORE INFORMATION	221
OPERATIONS	85	INDEX TO CONSOLIDATED FINANCIAL STATEMENTS	F-1
BUSINESS	106		
MANAGEMENT	169		
EXECUTIVE COMPENSATION	179		
DIRECTOR COMPENSATION	192		

Neither we nor the underwriters have authorized anyone to provide any information other than that contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the underwriters are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus is accurate only as of the date on the front cover of this prospectus. Our business, financial condition, results of operations, and prospects may have changed since that date.

For investors outside of the United States: We have not, and the underwriters have not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than the United States. Persons outside of the United States who come into possession of this prospectus must inform themselves about, and observe, any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside of the United States.

The market data and certain other statistical information used throughout this prospectus are based on independent industry publications, governmental publications, reports by market research firms, or other independent sources that we believe to be reliable sources. Industry publications and third-party research, surveys, and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. We are responsible for all of the disclosure contained in this prospectus, and we believe that these sources are reliable; however, we have not independently verified the information contained in such publications. While we are not aware of any misstatements regarding any third-party information presented in this prospectus, their estimates, in particular, as they relate to projections, involve numerous assumptions, are subject to risks and uncertainties, and are subject to change based on various factors, including those discussed under the section entitled "Risk Factors" and elsewhere in this prospectus. Some data are also based on our good faith estimates.

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before investing in our common stock, you should carefully read this entire prospectus, including our consolidated financial statements and the related notes included elsewhere in this prospectus. You should also consider, among other things, the matters described under “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” in each case appearing elsewhere in this prospectus. Unless the context otherwise requires, the terms “Vigil,” “the Company,” “we,” “us,” and “our” in this prospectus refer to Vigil Neuroscience, Inc. and its wholly owned, consolidated subsidiary, or either or both of them as the context may require.

OVERVIEW

We are a microglia-focused company dedicated to improving the lives of patients, caregivers and families affected by rare and common neurodegenerative diseases by pursuing the development of disease-modifying therapeutics to restore the vigilance of microglia. Microglia are the sentinel immune cells of the brain and play a critical role in maintaining central nervous system (CNS) health and responding to damage caused by disease. Leveraging recent research implicating microglial dysfunction in neurodegenerative diseases, we utilize a precision medicine approach to develop a pipeline of therapeutic candidates, initially addressing genetically defined patient subpopulations, that we believe will activate and restore microglial function. Our first therapeutic candidates are designed to activate Triggering Receptor Expressed on Myeloid Cells 2 (TREM2), a key microglial receptor protein that mediates responses to environmental signals in order to maintain brain health and whose dysfunction is linked to neurodegeneration. Our lead candidate, VGL101, is a fully human monoclonal antibody (mAb) that is designed to activate TREM2. In November 2021, the FDA cleared our Investigational New Drug application (IND) for VGL101 in ALSP at doses up to 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second half of 2022. We are initially developing VGL101 for the treatment of adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP), a rare, genetically defined, and fatal neurodegenerative disease caused by microglial dysfunction. We intend to expand development of VGL101 for the treatment of additional rare leukoencephalopathies and leukodystrophies in which microglia play an essential role, including cerebral adrenoleukodystrophy (cALD). We are also developing a novel small molecule TREM2 agonist suitable for oral delivery to treat common neurodegenerative diseases associated with microglial dysfunction. The initial focus of our novel small molecule TREM2 agonist program is for the treatment of Alzheimer’s disease (AD) in genetically defined patient subpopulations. We expect to select a development candidate by the first quarter of 2022 and, following IND-enabling studies, plan to initiate a first-in-human healthy volunteer trial. We believe our microglia focus, precision medicine approach, and pipeline, which spans multiple modalities, strongly position us to become a differentiated leader in the neurodegenerative therapeutic space.

Microglia sense signals in the brain, maintain homeostasis, and coordinate signal-specific downstream responses to clear pathogens and cellular debris that can evolve into disease-inducing agents. Homeostatic microglia transition to a neuroprotective disease-associated microglia (DAM) phenotype that maintains the anti-inflammatory CNS environment and removes protein clumps (misfolded protein aggregates that can form plaques) and cellular debris that accumulate in the brains of patients with neurodegenerative diseases and during normal aging. Microglial dysfunction, including the failure to transition to the DAM phenotype, is linked to a range of rare and common neurodegenerative diseases, including leukoencephalopathies, leukodystrophies, AD (particularly genetically defined AD subpopulations), and frontotemporal dementia (FTD). Preclinical data generated by third parties also support the modulation of microglia as a potential therapeutic approach in a variety of CNS diseases in the absence of a clear genetic link to microglial dysfunction such as Parkinson’s disease (PD) and Multiple Sclerosis (MS).

TREM2 acts as a sensor to detect cellular debris, lipids, and other damage signals. The receptor's normal function is required for microglial transition to the neuroprotective DAM phenotype. TREM2's protective role in neurodegenerative diseases was discovered through genome-wide association studies (GWAS). Multiple third party studies in animal models and in humans have shown that TREM2 deficiency is a likely driver of neurodegeneration, and we believe such studies provide a compelling rationale for therapeutically activating TREM2 signaling to treat neurodegenerative diseases.

We believe that each of the therapeutic candidates in our pipeline has the potential to be developed for multiple neurodegenerative diseases. Our precision medicine approach begins with rare, genetically defined diseases for which microglial dysfunction is believed to be a key driver of disease pathology and then utilizes findings from these efforts to inform expansion into larger and more common neurodegenerative diseases. Our strategy has the potential to mitigate downstream translational risk as we seek to advance our programs through early development and into the clinic. We believe this iterative, sequential approach is a key differentiator, potentially allowing us to generate clinical proof-of-concept (PoC) efficiently and leverage our initial development programs as well as research by others, in pursuing additional neurodegenerative disease opportunities.

We are executing on this approach with our lead pipeline candidate, VGL101, by initially focusing on the treatment of ALS. ALS affects an estimated 10,000 people in the U.S., with about 1,000 to 2,000 new cases annually. ALS has been diagnosed in countries around the world, with major clusters in North America (U.S. and Canada), Central and Northern Europe, and Asia. ALS is caused by loss-of-function mutations in the Colony Stimulating Factor 1 Receptor (CSF1R), a receptor that shares a common downstream signaling pathway with TREM2. The therapeutic rationale for VGL101 is to compensate for CSF1R loss-of-function by activating TREM2. We have generated robust preclinical evidence that suggests TREM2 agonism can rescue CSF1R loss-of-function.

Engagement with our stakeholders, including patients and scientific and provider communities, is central to our approach in rare neurodegenerative diseases. In September 2021, we began a natural history study of ALS patients to better characterize the patient journey, inform our clinical trial design, and facilitate recruitment into our clinical trials. We actively support a patient advocacy organization and have created a strong global network of key opinion leaders (KOLs), centers of excellence, and genetic counseling practices that each treat ALS patients and work with families affected by the disease. We have also established the world's first patient-facing ALS informational website to build disease awareness.

Beyond VGL101, we are developing a novel small molecule TREM2 activator (agonist) for the treatment of AD. GWAS have shown that a specific mutation in a *TREM2* variant (R47H) has one of the strongest associations with the development of AD, second in magnitude only to that associated with the apolipoprotein E4 (*ApoE4*) genotype. Our strategy in AD is to follow a precision medicine approach that first establishes that VGL101 treatment has the potential to correct microglial dysregulation in AD within certain genetically defined patient subpopulations, including those carrying *TREM2* and other variants. If the studies support it, we plan to expand the development of our TREM2 agonist into broader AD patient populations.

AD is the most common cause of dementia affecting an estimated 6.2 million patients in the U.S. alone as well as their families and caregivers. The cost of care for people with AD to our healthcare system is substantial. According to the Alzheimer's Association, the aggregate cost of AD and other dementias is expected to be \$355 billion in 2021 and this number could increase to as much as \$1.1 trillion by 2050.

The following table highlights our preclinical and clinical programs.



* The healthy volunteer single and multiple ascending dose trial is a first-in-human Phase 1 clinical trial, principally to evaluate VGL101's safety and tolerability. The trial, depending on the safety and tolerability results, is expected to provide a basis for conducting subsequent clinical trials in ALSP, AD, and cALD patients.

** The FDA has cleared our IND to evaluate VGL101 in a Phase 1 trial in healthy volunteers at doses up to 20 mg/kg with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg.

*** We expect to announce topline data for the Phase 1 clinical trial in the second half of 2022. Assuming our Phase 1 trial progresses on our expected timeline, our FDA discussions proceed as currently planned, and we identify an acceptable dose as part of the Phase 1 trial, we believe we can initiate our interventional studies in ALSP as early as the second half of 2022.

**** Will require an IND amendment to our open IND.

We currently have two programs aimed at developing microglia-targeted TREM2 agonists for the treatment of neurodegenerative diseases:

- VGL101: A fully human mAb targeting human TREM2 for the treatment of rare microgliopathies. We are initially developing VGL101 for the treatment of patients with ALSP, a rare, genetically defined, and fatal neurodegenerative disease caused by microglial dysfunction. In multiple preclinical *in vitro* and *in vivo* studies, VGL101 specifically and potently activated TREM2, thereby targeting cells expressing human TREM2 to initiate the cascade of downstream signaling that modulates the neuroprotective and homeostatic functions of microglia. In September 2021, we began a non-interventional natural history study of ALSP patients. In November 2021, the FDA cleared our IND for VGL101 in ALSP at doses up to 20 mg/kg, with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second half of 2022. Assuming our Phase 1 trial progresses on our expected timeline, our FDA discussions proceed as currently planned, and we identify an acceptable dose as part of the Phase 1 trial, we believe we can initiate our interventional studies in ALSP as early as the second half of 2022. We have also identified a second rare microgliopathy, cALD, for which we plan to submit an IND amendment to our open IND to conduct a Phase 2 clinical trial in the first half of 2023, following the completion of the VGL101 Phase 1 clinical trial in healthy volunteers. We also plan to submit a protocol amendment to the FDA under our open IND to conduct a Phase 1b biomarker-based, proof-of-mechanism clinical trial of VGL101, expected to begin in the second half of 2022, in genetically defined AD patients with or without the relevant *TREM2* variants to inform subsequent clinical trials with our small molecule agonist.
- A novel, orally available, small molecule TREM2 agonist for common neurodegenerative diseases that are linked to microglial dysfunction. We are initially developing this program for the treatment of genetically defined subpopulations of AD patients. Compounds in our lead series have been observed to be highly CNS penetrant after oral dosing, and similar to VGL101, are specific, potent activators of

TREM2. We expect to have a development candidate from our lead series selected by the first quarter of 2022, and, following IND-enabling studies, initiate a first-in-human healthy volunteer trial. In addition, we have ongoing screening efforts that have resulted in the discovery of a second series with a different chemical core structure than the lead series. Our second series is currently in the early lead optimization stage.

Over time, we plan to expand our pipeline, either through internal discovery and development, or through strategic collaborations or alliances with academic organizations, or pharmaceutical or biotechnology companies.

Our Business Strategy

Our goal is to be a leader in the development and commercialization of microglia-targeted, disease-modifying therapeutics that slow or halt progression of a range of rare and common neurodegenerative diseases. Key elements of our business strategy are to:

- Apply our precision medicine approach to develop microglia-targeted therapies for patients with rare, genetically defined neurodegenerative diseases and subsequently advance into neurodegenerative diseases affecting larger patient populations.
- Advance our lead therapeutic candidate, VGL101, a mAb TREM2 agonist, for the treatment of ALS and other rare leukoencephalopathies and leukodystrophies.
- Develop a novel, orally-available, small molecule TREM2 agonist for the treatment of more common neurodegenerative diseases, beginning with genetically defined subpopulations of AD patients.
- Expand our modality-agnostic product pipeline to other microglial targets beyond TREM2.
- Engage the stakeholder community including patients, advocacy groups, and clinical leaders.

Our Corporate History and Team

We were co-founded in mid-2020 by Atlas Venture and shortly thereafter entered into a license agreement with Amgen Inc. (Amgen). Through the license agreement, we acquired exclusive worldwide rights to Amgen's TREM2 agonist program, including VGL101 and related molecules, the small molecule TREM2 agonist program, associated intellectual property, and certain manufacturing know-how.

We have built an experienced management team with a proven track record of drug discovery and development in neuroscience, as well as substantial operational and business expertise. Our CEO, Ivana Magovčević-Liebisch, PhD, JD, is an accomplished pharmaceutical and biotechnology executive with more than 20 years of senior management experience in financing, strategic partnerships, mergers and acquisitions, clinical development, regulatory affairs, commercialization, legal, and intellectual property strategies. Spyridon (Spyros) Papapetropoulos, MD, PhD, our Chief Medical Officer, is an experienced biopharmaceutical executive, recognized neuroscientist, and neurodegenerative disease clinician. Jennifer Ziolkowski, CPA, our Chief Financial Officer, has more than 25 years of executive management experience in various cross-functional finance and operational leadership roles. Evan A. Thackaberry, PhD, DABT, our Senior Vice President, Early Development, brings over 15 years of drug development experience and cross-functional leadership.

Our team is supported by a group of investors who have shared our vision and commitment to harness the power of microglia to develop transformative treatments for neurodegenerative diseases.

SUMMARY OF MATERIAL RISKS ASSOCIATED WITH OUR BUSINESS

Our business is subject to a number of risks of which you should be aware before making an investment decision. These risks include, but are not limited to, the following:

- We have a limited operating history, have incurred significant operating losses since our inception and expect to incur significant losses for the foreseeable future. We may never generate any revenue or become profitable or, if we achieve profitability, we may not be able to sustain it.
- We will require additional financing to achieve our goals, and a failure to obtain this necessary capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our development programs, commercialization efforts or other operations.
- Our history of recurring losses and anticipated expenditures raises substantial doubts about our ability to continue as a going concern. Our ability to continue as a going concern requires that we obtain sufficient funding to finance our operations.
- We have never successfully completed any clinical trials, and if we are unable to identify and advance therapeutic candidates through preclinical studies and clinical trials, obtain marketing approval and ultimately commercialize them, or experience significant delays in doing so, our business will be materially harmed.
- We may expend our limited resources to pursue a particular therapeutic candidate or indication, such as our initial focus on developing VGL101, and fail to capitalize on therapeutic candidates or indications that may be more profitable or for which there is a greater likelihood of success. As such, our business is highly dependent on the clinical advancement of our programs and is especially dependent on the success of our lead candidate, VGL101.
- We have concentrated a substantial portion of our research and development efforts on the treatment of neurodegenerative diseases, a field that has seen limited success in drug development. Further, our product candidates are based on new approaches and novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval.
- We may encounter substantial delays in the commencement, enrollment or completion of our planned clinical trials, which could prevent us from receiving of necessary regulatory approvals or commercializing any therapeutic candidates we develop on a timely basis, if at all.
- Use of our therapeutic candidates could be associated with side effects, adverse events or other properties or safety risks, which could delay or preclude approval, cause us to suspend or discontinue clinical trials, abandon a therapeutic candidate, limit the commercial profile of an approved label or result in other significant negative consequences that could severely harm our business, prospects, operating results and financial condition.
- Our therapeutic candidates are subject to extensive regulation and compliance, which is costly and time-consuming, and such regulation may cause unanticipated delays or prevent the receipt of the required approvals to commercialize our therapeutic candidates.
- We may not be successful in our efforts to expand our pipeline of therapeutic candidates.
- We may be required to make significant payments under our license agreement with Amgen for TREM2, and if we breach our license agreement with Amgen related to TREM2, we could lose the ability to continue the development and commercialization of TREM2.
- We rely, and expect to continue to rely, on third parties to conduct some or all aspects of our product manufacturing, research and preclinical and clinical testing, and these third parties may not perform satisfactorily.

- If we are unable to obtain and maintain patent protection for our therapeutic programs and other proprietary technologies we develop, or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize products and technology similar or identical to ours, and our ability to successfully commercialize our therapeutic programs and other proprietary technologies we may develop may be adversely affected.
- We have identified a material weakness in our internal control over financial reporting. If we are unable to remediate this material weakness, or if we identify additional material weaknesses in the future or otherwise fail to maintain effective internal control over financial reporting, we may not be able to accurately or timely report our financial condition or results of operations, which may adversely affect our business.

The summary risk factors described above should be read together with the text of the full risk factors in the section entitled “Risk Factors” and the other information set forth in this prospectus, including our consolidated financial statements and the related notes, as well as in other documents that we file with the SEC. The risks summarized above or described in full elsewhere in this prospectus are not the only risks that we face. Additional risks and uncertainties not presently known to us, or that we currently deem to be immaterial may also materially adversely affect our business, financial condition, results of operations, and future, growth prospects.

CORPORATE HISTORY

We were incorporated under the laws of the State of Delaware on June 22, 2020 under the name “Vigil Neuroscience, Inc.” Our principal corporate office is located at 1 Broadway, 7th Floor, Suite 07-300, Cambridge, MA 02142, and our telephone number is (857) 254-4445. Our website address is www.vigilneuro.com. We do not incorporate the information on or accessible through our website into this prospectus, and you should not consider any information on, or that can be accessed through, our website as part of this prospectus.

We own various unregistered trademarks in the United States, including our company name, as well as one pending U.S. federal trademark application. All other trademarks or trade names referred to in this prospectus are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus are referred to without the symbols ® and ™, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

IMPLICATIONS OF BEING AN EMERGING GROWTH COMPANY AND A SMALLER REPORTING COMPANY

We qualify as an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012, as amended, or the JOBS Act. As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

- only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure;
- reduced disclosure about our executive compensation arrangements;
- no non-binding advisory votes on executive compensation or golden parachute arrangements;

- exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting; and
- an exemption from compliance with the requirements of the Public Company Accounting Oversight Board regarding the communication of critical audit matters in the auditor’s report on financial statements.

We may take advantage of these exemptions for up to five years or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company on the date that is the earliest of (i) the last day of the fiscal year in which we have total annual gross revenues of \$1.07 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the date of the completion of this offering; (iii) the date on which we have issued more than \$1 billion in non-convertible debt during the previous three years; or (iv) the last day of the fiscal year in which we are deemed to be a “large accelerated filer”, which would occur if the aggregate market value of our equity securities held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter. We may choose to take advantage of some but not all of these exemptions. We have taken advantage of reduced reporting requirements in this prospectus. Accordingly, the information contained herein may be different from the information you receive from other public companies in which you hold stock. Additionally, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to avail ourselves of this exemption and, therefore, while we are an emerging growth company we will not be subject to new or revised accounting standards at the same time that they become applicable to other public companies that are not emerging growth companies. As a result of these elections, the information that we provide in this prospectus may be different than the information you may receive from other public companies in which you hold equity interests. In addition, it is possible that some investors will find our common stock less attractive as a result of these elections, which may result in a less active trading market for our common stock and higher volatility in our share price.

We are also a “smaller reporting company” as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies until the fiscal year following the determination that (i) our voting and non-voting common stock held by non-affiliates is more than \$250 million measured on the last business day of our second fiscal quarter, or (ii) our annual revenues are more than \$100 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is more than \$700 million measured on the last business day of our second fiscal quarter.

THE OFFERING

Common stock offered	7,000,000 shares.
Underwriters' option to purchase additional shares	We have granted a 30-day option to the underwriters to purchase up to an aggregate of 1,050,000 additional shares of common stock from us at the public offering price, less underwriting discounts and commissions on the same terms as set forth in this prospectus.
Common stock to be outstanding immediately after this offering	28,263,963 shares (29,313,963 shares if the underwriters exercise their option to purchase additional shares in full).
Use of proceeds	We estimate that our net proceeds from the sale of shares of our common stock in this offering will be approximately \$101.1 million, or \$116.7 million if the underwriters exercise in full their option to purchase additional shares, assuming an initial public offering price of \$16.00 per share, the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. The principal purposes of this offering are to create a public market for our common stock and thereby facilitate future access to the public equity markets, increase our visibility in the marketplace and obtain additional capital. We currently intend to use the net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, for the following: (i) advance the development of VGL101 for the treatment of ALSP and other rare leukoencephalopathies and leukodystrophies, including the initiation of clinical trials, clinical research outsourcing and drug manufacturing; (ii) for the continued research of our novel, small molecule program focusing on treatments for common neurodegenerative diseases that are linked to microglial dysfunction with genetically defined AD as the initial indication; (iii) for the continued research and development of our development programs, including the expansion of our modality agnostic product pipeline to include other microglial targets; and (iv) the remainder for working capital and other general corporate purposes. See "Use of Proceeds" for additional information.
Directed share program	At our request, the underwriters have reserved up to 5 percent of the shares of common stock to be issued by the Company and offered by this prospectus for sale, at the initial public offering price, to directors, officers, employees, business associates and related

persons of Vigil Neuroscience, Inc. If purchased by these persons, these shares will be subject to a 180-day lock-up restriction. The number of shares of common stock available for sale to the general public will be reduced to the extent these individuals purchase such reserved shares. Any reserved shares that are not so purchased will be offered by the underwriters to the general public on the same basis as the other shares offered by this prospectus.

Risk factors

You should carefully read the “Risk Factors” section of this prospectus for a discussion of factors that you should consider before deciding to invest in our common stock.

Proposed Nasdaq Global Market symbol

VIGL

The number of shares of our common stock to be outstanding after this offering presented above and included elsewhere in this prospectus is based on 21,263,963 shares of our common stock (which includes 284,717 shares of restricted common stock) outstanding as of September 30, 2021, and gives effect to the automatic conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of our common stock immediately prior to the completion of this offering, and excludes:

- 2,921,370 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2021 under our 2020 Equity Incentive Plan, or 2020 Plan, at a weighted average exercise price of \$3.83 per share;
- 355,396 shares of our common stock issuable upon the exercise of stock options granted after September 30, 2021 pursuant to our 2020 Plan at a weighted average exercise price of \$9.62 per share, including 167,307 stock options that were subsequently forfeited;
- 20,394 shares of common stock issued upon the exercise of stock options after September 30, 2021;
- 22,537 shares of restricted common stock repurchased by us after September 30, 2021;
- 464,350 shares of common stock reserved for future issuance as of September 30, 2021 under the 2020 Plan, which will cease to be available for issuance at the time that our 2021 Stock Option and Incentive Plan, or the 2021 Stock Plan, becomes effective;
- 286,127 shares of common stock reserved for future issuance under our 2021 Employee Stock Purchase Plan, or ESPP, which will become effective in connection with the completion of this offering; and
- 3,145,281 shares of our common stock that will become available for future issuance under our 2021 Plan, which will become effective in connection with the completion of this offering.

Unless otherwise indicated, all information in this prospectus reflects or assumes the following:

- the conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of common stock immediately prior to the closing of this offering;
- no exercise of the outstanding options described above;
- no exercise by the underwriters of their option to purchase up to 1,050,000 additional shares of common stock in this offering;

[Table of Contents](#)

- a one-for-2.7732 reverse split of our common stock effected on December 30, 2021; and
- the filing of our third amended and restated certificate of incorporation immediately prior to the closing of this offering and the effectiveness of our amended and restated bylaws upon the effectiveness of the registration statement of which this prospectus is a part.

SUMMARY FINANCIAL DATA

You should read the following summary financial data together with our consolidated financial statements and the related notes included elsewhere in this prospectus and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” section of this prospectus. We have derived the statement of operations data for the period from June 22, 2020 (inception) to December 31, 2020 from our audited financial statements appearing elsewhere in this prospectus. The statement of operations data for the period from June 22, 2020 (inception) to September 30, 2020 and for the nine months ended September 30, 2021 and the balance sheet data as of September 30, 2021 have been derived from our unaudited financial statements included elsewhere in this prospectus and have been prepared on the same basis as the audited financial statements. In the opinion of management, the unaudited data reflect all adjustments, consisting only of normal recurring adjustments, necessary for a fair statement of the financial information in those statements. Our historical results are not necessarily indicative of the results that should be expected in any future periods.

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020	Nine Months ended September 30, 2021
	(in thousands, except share and per share amounts)		
Statement of Operations and Comprehensive Loss Data:			
Operating expenses:			
Related party acquired in-process research and development	\$ 20,923	\$ 20,923	\$ —
Research and development ⁽¹⁾	4,514	1,337	23,211
General and administrative	1,777	895	6,221
Total operating expenses	<u>27,214</u>	<u>23,155</u>	<u>29,432</u>
Loss from operations	(27,214)	(23,155)	(29,432)
Other income (expense), net			
Change in fair value of the related party antidilution obligation	(1,307)	(1,152)	(836)
Change in fair value of Series A preferred stock tranche obligation	(24)	(3)	(28)
Interest income	—	—	3
Other expense, net	(1)	—	(5)
Total other income (expense)	<u>(1,332)</u>	<u>—</u>	<u>(866)</u>
Net loss and comprehensive loss	\$ (28,546)	\$ (24,310)	\$ (30,298)
Net loss attributable to common stockholders basic and diluted ⁽²⁾	<u>\$ (21.15)</u>	<u>\$ (19.76)</u>	<u>\$ (19.94)</u>
Weighted average number of shares outstanding used in computation of net loss per common share, basic and diluted ⁽²⁾	<u>1,349,702</u>	<u>1,230,385</u>	<u>1,519,686</u>
Pro forma net loss per common share, basic and diluted ⁽³⁾	<u>\$ (1.37)</u>		<u>\$ (1.44)</u>
Pro forma weighted average number of shares outstanding used in computation of net loss per common share, basic and diluted ⁽³⁾	<u>20,866,572</u>		<u>21,056,556</u>

(1) Includes related-party amounts of \$811 for the period from June 22, 2020 (inception) to December 31, 2020, \$390 for the period from June 22, 2020 (inception) to September 30, 2020, and \$2,602 for the nine months ended September 30, 2021. See Note 13 to our consolidated financial statements.

(2) See Note 9 to our consolidated financial statements included elsewhere in this prospectus for details on the calculation of basic and diluted net loss per share attributable to common stockholders.

- (3) Pro forma basic and diluted net loss per share attributable to common stockholders has been prepared to give effect to adjustments to our capital structure arising in connection with the completion of this offering and is calculated by dividing the pro forma net loss attributable to common stockholders by the pro forma weighted-average common shares outstanding for the period. Pro forma net loss attributable to common stockholders is the same as the amount of net loss attributable to common stockholders for each period presented. Pro forma weighted-average common shares outstanding is computed by adjusting the weighted-average common shares outstanding to give pro forma effect to the automatic conversion of all shares of our preferred stock outstanding as of December 31, 2020 and September 30, 2021 into 19,536,870 shares of common stock as if such conversion had occurred on June 22, 2020 (inception). Pro forma basic and diluted net loss per share attributable to common stockholders does not include the effect of the shares expected to be sold in this offering.

	As of September 30, 2021		
	Actual	Pro forma(1) (in thousands)	Pro forma as adjusted(2)
Balance Sheet Data:			
Cash and cash equivalents	\$ 110,656	\$ 110,656	\$ 211,716
Working capital(3)	\$ 102,305	\$ 102,305	\$ 204,276
Total assets	\$ 114,415	\$ 114,415	\$ 214,564
Convertible preferred stock	\$ 161,980	\$ —	\$ —
Total stockholders' equity (deficit)	\$ (57,258)	\$ 104,722	\$ 205,782

- (1) The pro forma balance sheet data gives effect to (i) the automatic conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of our common stock immediately prior to the completion of this offering.
- (2) The pro forma as adjusted balance sheet data gives effect to (i) the pro forma adjustments set forth in footnote (1) above and (ii) the issuance and sale of 7,000,000 shares of our common stock in this offering at an assumed initial public offering price of \$16.00 per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each \$1.00 increase (decrease) in the assumed initial public offering price of \$16.00 per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash, cash equivalents and marketable securities, working capital, total assets and total stockholders' equity (deficit) by \$6.5 million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash, cash equivalents and marketable securities, working capital, total assets and total stockholders' equity (deficit) by \$14.9 million, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.
- (3) We define working capital as current assets less current liabilities.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider carefully the risks and uncertainties described below, together with all of the other information in this prospectus, including our financial statements and related notes and the “Management’s Discussion and Analysis of Financial Condition and Results of Operations” section, before making an investment decision. These risks may materially and adversely affect our business, financial condition, results of operations and prospects. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, may also become important factors that affect us. In that event, the trading price of our common stock could decline, and you could lose part or all of your investment.

Risks Related to Our Limited Operating History, Business, and Financial Position

We have a limited operating history, have incurred significant operating losses since our inception and expect to incur significant losses for the foreseeable future. We may never generate any revenue or become profitable, and, if we achieve profitability, we may not be able to sustain it.

Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We are a clinical-stage biopharmaceutical company with a limited operating history upon which you can evaluate our business and prospects. We commenced operations in 2020, and, to date, we have focused primarily on organizing and staffing our company, business planning, raising capital, identifying therapeutic candidates, establishing our intellectual property portfolio and conducting research and preclinical studies. As an organization, we have not yet initiated or completed any clinical trials, obtained regulatory approvals, manufactured a clinical- or commercial-scale product, or arranged for a third party to do so on our behalf, or conducted sales and marketing activities necessary for successful product commercialization. Consequently, any predictions made about our future success or viability are speculative.

We have incurred significant operating losses since our inception. We do not have any products approved for sale and have not generated any product revenue since our inception. If our therapeutic candidates are not successfully developed and approved, we may never generate any, or any significant revenue. Our net loss was \$28.5 million for the period from June 22, 2020 (inception) to December 31, 2020. As of December 31, 2020, we had an accumulated deficit of \$28.5 million. Substantially all of our losses have resulted from expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations. All of our therapeutic candidates will require substantial additional development time and resources before we would be able to apply for or receive regulatory approvals and begin generating revenue from product sales. We expect to continue to incur losses for the foreseeable future, and we anticipate these losses will increase substantially as we continue our development of, seek regulatory approval for and potentially commercialize any of our therapeutic candidates.

To become and remain profitable, we must succeed in developing and eventually commercializing products that generate significant revenue. This will require us to be successful in a range of challenging activities, including identifying lead therapeutic candidates, discovering additional therapeutic candidates, conducting preclinical studies prior to submitting an IND, obtaining clearance for an IND, completing additional preclinical studies and clinical trials of our therapeutic candidates, obtaining regulatory approval for therapeutic candidates and manufacturing, marketing and selling any products for which we may obtain regulatory approval. We are only in the preliminary stages of most of these activities. We may never succeed in these activities and, even if we do, may never generate revenues that are significant enough to achieve profitability. In addition, we have not yet demonstrated an ability to successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields, particularly in the biopharmaceutical industry. Because of the numerous risks and uncertainties associated with biopharmaceutical product development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve

[Table of Contents](#)

profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable may have an adverse effect on the value of our company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our therapeutic candidates or even continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

Our limited operating history may make it difficult to evaluate our technology and industry and predict our future performance. Though several companies have conducted or are conducting studies involving neurodegenerative diseases for which microglia deficiency is a key driver of disease pathology, the relevance of those studies to the evaluation of therapeutic candidates developed using our precision medicine approach may be difficult to ascertain. Our short history as an operating company and novel therapeutic approach make assessments of our future success or viability subject to significant uncertainty. We will encounter risks and difficulties frequently experienced by early-stage companies in rapidly evolving fields. Failure to address these risks successfully will cause our business to suffer. Similarly, we expect that our financial condition and operating results will fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. As a result, our stockholders should not rely upon the results of any quarterly or annual period as an indicator of future operating performance.

In addition, as an early-stage company, we will encounter unforeseen expenses, difficulties, complications, delays and other known and unknown circumstances. If we advance our therapeutic candidates, we will need to transition from a company with a research focus to a company capable of supporting clinical development and, if successful, commercial activities. We may fail in that transition.

We will require additional financing to achieve our goals, and failure to obtain this necessary capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our development programs, commercialization efforts or other operations.

The development of biopharmaceutical therapeutic candidates is capital-intensive. We expect our expenses to increase in connection with our ongoing and planned activities, particularly as we conduct preclinical studies of our development programs, initiate clinical trials for our therapeutic candidates and seek regulatory approvals for our current therapeutic candidates and any future therapeutic candidates we may develop. If we obtain regulatory approval for any of our therapeutic candidates, we also expect to incur significant commercialization expenses related to product manufacturing, marketing, sales and distribution. Because the outcome of any preclinical study or clinical trial is highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of our therapeutic candidates.

Furthermore, following the completion of this offering, we expect to incur additional costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. Failing to raise capital when needed or on attractive terms could force us to delay, reduce or eliminate our research and development programs or any future commercialization efforts.

We believe that the net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, will enable us to fund our operations into the fourth quarter of 2023. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect. Our operating plans and other demands on our cash resources may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other capital sources, including potentially collaborations, licenses and other similar arrangements. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. Attempting to secure additional financing may divert our management from our day-to-day activities, which may adversely affect our ability to develop our therapeutic candidates.

Our future capital requirements will depend on many factors, including, but not limited to:

- the type, number, scope, progress, expansions, results, costs and timing of our preclinical studies and any clinical trials of the therapeutic candidates that we are pursuing or may choose to pursue in the future;
- the clinical development plans we establish for our therapeutic candidates;
- the costs and timing of manufacturing of our therapeutic candidates and commercial manufacturing if any therapeutic candidate is approved for sale;
- the costs of establishing and maintaining clinical and commercial supply for the development and manufacture of our therapeutic candidates;
- the costs, timing and outcome of regulatory review of our therapeutic candidates;
- the terms and timing of establishing and maintaining collaborations, licenses and other similar arrangements;
- the costs of obtaining, maintaining and enforcing our patents and other intellectual property rights;
- the costs associated with our efforts to enhance operational systems and hire additional personnel to satisfy our obligations as a public company, including enhanced internal control over financial reporting;
- the costs associated with hiring additional personnel and consultants as our preclinical and clinical activities increase;
- the achievement of milestones or occurrence of other developments that trigger payments under any collaboration agreements, if any;
- the costs and timing of establishing or securing sales and marketing capabilities if any therapeutic candidate is approved;
- regulatory approval and revenue, if any, received from commercial sales of our therapeutic candidates; and
- our ability to achieve sufficient market acceptance, coverage and adequate reimbursement from third-party payors and adequate market share and revenue for any approved products.

Accordingly, we will need to continue to rely on additional financing to achieve our business objectives. Adequate additional financing may not be available to us on acceptable terms, or at all.

Our operating results may fluctuate significantly, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or our guidance.

Our quarterly and annual operating results may fluctuate significantly in the future. From time to time, we may enter into license or collaboration agreements or strategic partnerships with other companies to gain access to new technologies, or to out-license our technologies. Any such agreement may include development funding and significant upfront and milestone payments and/or royalties, which may become an important source of our revenue. Under our exclusive license agreement with Amgen, for example, we are required to pay Amgen up to \$80.0 million upon the achievement of specified regulatory milestones for the first mAb TREM2 agonist product, or mAb product, and first small molecule TREM2 agonist product, or small molecule product, upon achievement of specified regulatory milestones as well as aggregate milestone payments of up to \$350.0 million upon achievement of specific commercial milestones across all such mAb products and small molecule products, and tiered royalties of low to mid single-digit percentages on annual net sales of the products covered by the license. These milestone payments may vary significantly from period to period and the variance could cause a significant fluctuation in our operating results from one period to the next.

[Table of Contents](#)

In addition, we measure compensation cost for stock-based awards made to employees at the grant date of the award, based on the fair value of the award as determined by our board of directors, and recognize the cost as an expense over the employee's requisite service period. As the variables that we use as a basis for valuing these awards change over time, including, after the closing of this offering, our underlying stock price and stock price volatility, the magnitude of the expense that we must recognize may vary significantly.

Furthermore, our operating results may fluctuate due to a variety of other factors, many of which are outside of our control and may be difficult to predict, including, but not limited to:

- the timing and outcomes of preclinical studies and clinical trials for VGL101 and any therapeutic candidates from our discovery programs, or competing therapeutic candidates;
- the timing and cost of, and level of investment in, research and development activities relating to our programs, which will change from time to time;
- the cost of manufacturing our current therapeutic candidates and any future therapeutic candidates, which may vary depending on the FDA, European Medicines Agency (EMA) or other comparable foreign regulatory authority guidelines and requirements, the quantity of production and the terms of our agreements with manufacturers;
- the timing and cost of meeting regulatory requirements established by the FDA or EMA or comparable foreign regulatory authorities;
- any delays in regulatory review or approval of VGL101 or therapeutic candidates from any of our discovery programs;
- our ability to enroll patients in clinical trials and the timing of enrollment;
- expenditures that we will or may incur to acquire or develop additional therapeutic candidates and technologies or other assets;
- the need to conduct unanticipated clinical trials or trials that are larger or more complex than anticipated;
- competition from existing and potential future products that compete with VGL101 or any of our discovery programs, and changes in the competitive landscape of our industry, including consolidation among our competitors or partners;
- the level of demand for any of our therapeutic candidates, if approved, which may fluctuate significantly and be difficult to predict;
- the risk/benefit profile, cost and reimbursement policies with respect to our therapeutic candidates, if approved, and existing and potential future products that compete with VGL101 or any of our discovery programs;
- our ability to commercialize VGL101 or therapeutic candidates from any of our discovery programs, if approved, inside and outside of the U.S., either independently or working with third parties;
- our ability to establish and maintain collaborations, licensing or other arrangements;
- potential unforeseen business disruptions that increase our costs or expenses;
- future accounting pronouncements or changes in our accounting policies; and
- the changing and volatile global economic and political environment.

The cumulative effect of these factors could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance. This variability and unpredictability could also result in our failing to meet the expectations of industry or financial

[Table of Contents](#)

analysts or investors for any period. If our operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated guidance we may provide.

Our history of recurring losses and anticipated expenditures raises substantial doubts about our ability to continue as a going concern. Our ability to continue as a going concern requires that we obtain sufficient funding to finance our operations.

We have incurred operating losses to date and it is possible we may never generate sufficient cash flow from operations to operate as a going concern. We have concluded, and the report from our independent registered public accounting firm for the period from June 22, 2020 (inception) to December 31, 2020 includes an explanatory paragraph stating, that our recurring losses and negative cash flows from operations since inception and required additional funding to finance our operations raise substantial doubt about our ability to continue as a going concern. If we are unable to obtain sufficient funding, we could be forced to delay, reduce or eliminate all of our research and development programs, product portfolio expansion or commercialization efforts, and our financial condition and results of operations will be materially and adversely affected and we may be unable to continue as a going concern. After the completion of this offering, future reports from our independent registered public accounting firm may also contain statements expressing substantial doubt about our ability to continue as a going concern. If we seek additional financing to fund our business activities in the future and there remains substantial doubt about our ability to continue as a going concern, investors or other financing sources may be unwilling to provide additional funding to us on commercially reasonable terms or at all.

We have identified a material weakness in our internal control over financial reporting. If we are unable to remediate this material weakness, or if we identify additional material weaknesses in the future or otherwise fail to maintain effective internal control over financial reporting, we may not be able to accurately or timely report our financial condition or results of operations, which may adversely affect our business.

Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Any failure to maintain effective internal control over financial reporting could cause us to fail to accurately or timely report our financial condition or results of operations to meet our reporting obligations.

We identified a material weakness in our internal control over financial reporting. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim consolidated financial statements will not be prevented or detected on a timely basis. The Company did not design and maintain effective controls over the cut-off of certain general and administrative and research and development expenses. This material weakness resulted in immaterial adjustments to general and administrative expenses, research and development expenses and accrued expenses as of and for the year ending December 31, 2020, and as of and for each of the interim periods ending June 30, 2020 and September 30, 2020, all of which were recorded prior to the issuance of the interim and annual consolidated financial statements. Additionally, this material weakness could result in misstatements of the aforementioned account balances or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected. During fiscal year 2021, we are enhancing our internal controls over financial reporting to remediate the material weakness. As the revised and enhanced controls need to be in operation for a sufficient period of time to ensure that the controls are operating as designed, management has concluded that the material weakness cannot be considered remediated as of September 30, 2021.

We cannot assure that the measures we have taken to date, and actions we may take in the future, will be sufficient to remediate the control deficiency that led to this material weakness in our internal control over

[Table of Contents](#)

financial reporting or that they will prevent or avoid potential future material weaknesses. In addition, neither our management nor an independent registered public accounting firm has performed an evaluation of our internal control over financial reporting because no such evaluation has been required. Had we or our independent registered public accounting firm performed an evaluation of our internal control over financial reporting, additional material weaknesses may have been identified. If we are unable to successfully remediate our existing or any future material weaknesses in our internal control over financial reporting, or we identify any additional material weaknesses, the accuracy and timing of our financial reporting may be adversely affected, potentially resulting in restatements of our consolidated financial statements; we may be unable to maintain compliance with securities law requirements regarding timely filing of periodic reports and applicable Nasdaq listing requirements; investors may lose confidence in our financial reporting; and our stock price may decline as a result.

If we are unable to design and maintain effective internal control over financial reporting in the future, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock may decline.

Ensuring that we have adequate internal control over financial reporting in place so that we can produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. In connection with this offering, we intend to begin the process of documenting, reviewing and improving our internal control over financial reporting to comply with the Securities and Exchange Commission's (SEC) rules and regulations, which will require annual management assessment of the effectiveness of our internal control over financial reporting.

Implementing any appropriate changes to our internal control over financial reporting may distract our officers and employees, entail substantial costs to modify our existing processes, and take significant time to complete. These changes may not, however, be effective in establishing and maintaining the adequacy of our internal controls, and any failure to maintain that adequacy, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and harm our business. If we fail to remediate our identified material weakness, or identify additional material weaknesses, in our internal control over financial reporting; if we are unable to comply with the requirements of the SEC's rules and regulations in a timely manner; or if we are unable to assert that our internal control over financial reporting is effective, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could decline, and we could also become subject to investigations by the stock exchange on which our common stock is listed, the SEC or other regulatory authorities, which could require additional financial and management resources.

Failure or security breaches of, loss or leakage of data from, or other disruptions in, our internal information technology systems, or those of our third-party CROs or other vendors, contractors or consultants, could result in a material disruption of our development programs, compromise sensitive information related to our business or prevent us from accessing critical information, potentially exposing us to liability or otherwise adversely affecting our business.

We are increasingly dependent upon information technology systems, infrastructure and data to operate our business. In the ordinary course of business, we collect, store and transmit confidential information (including but not limited to intellectual property, proprietary business information and personal information). We also have outsourced elements of our operations to third parties, and, as a result, we manage a number of third-party clinical research organizations (CROs), vendors, and other contractors and consultants who have access to our confidential information.

Despite the implementation of security measures, given their size and complexity and the increasing amounts of confidential information that they maintain, our internal information technology systems and those of

[Table of Contents](#)

our third-party CROs, vendors and other contractors and consultants are vulnerable to breakdown or other damage or interruption from service interruptions, system malfunction, natural disasters, terrorism, war and telecommunication and electrical failures, as well as security breaches from inadvertent or intentional actions by our employees, third-party CROs, vendors, contractors, consultants, business partners and/or other third parties, or from cyber-attacks by malicious third parties (including the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of information), which may compromise our system infrastructure, or that of our third-party CROs, vendors and other contractors and consultants, or lead to data leakage. The risk of a security breach or disruption, particularly through cyber-attacks or cyber intrusion, including by computer hackers, foreign governments, and cyber terrorists, has generally increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. Also, due to the COVID-19 pandemic, most of our employees are working remotely. As a result, we may have increased cyber security and data security risks, due to increased use of home wi-fi networks and virtual private networks, as well as increased disbursement of physical machines. While we implement IT controls to reduce the risk of a cyber security or data security breach, there is no guarantee that these measures will be adequate to safeguard all systems, especially with an increased number of employees working remotely. The techniques used by cyber criminals change frequently, may not be recognized until launched and can originate from a wide variety of sources, including outside groups such as external service providers, organized crime affiliates, terrorist organizations or hostile foreign governments or agencies. Disruptions or security breaches resulting in a loss of, or damage to, our data or applications, or those of our third-party CROs, vendors and other contractors and consultants, or inappropriate disclosure of confidential or proprietary information, could generate liability and reputational damage and the further development and commercialization, if approved, of VGL101 or any future therapeutic candidates could be delayed. The costs related to significant security breaches or disruptions could be material and exceed the limits of the cybersecurity insurance we maintain against such risks. We may have limited recourse for disruptions or breaches of the information technology systems of our third-party CROs, vendors and other contractors and consultants, and we may have to expend significant resources to mitigate the impact of such an event, and to develop and implement protections to prevent future events of this nature from occurring.

Our data protection efforts and our investment in information technology do not preclude significant breakdowns, data leakages, breaches in our systems, or those of our third-party CROs, vendors and other contractors and consultants, or other cyber incidents that could have a material adverse effect upon our reputation, business, operations or financial condition. The loss of clinical trial data for VGL101 or any other therapeutic candidates could result in delays in our marketing approval efforts and significantly increase our costs to recover or reproduce the data.

Furthermore, security breaches or significant disruptions of our internal information technology systems or those of our third-party CROs, vendors and other contractors and consultants, could result in the loss, misappropriation and/or unauthorized access, use, or disclosure of, or the prevention of access to, confidential information (including trade secrets or other intellectual property, proprietary business information and personal information), which could result in financial, legal, business and reputational harm to us. For example, any such event that leads to unauthorized access, use, or disclosure of personal information, including personal information regarding our clinical trial subjects or employees, could harm our reputation directly, compel us to comply with federal and/or state breach notification laws and foreign law equivalents, subject us to mandatory corrective action, and otherwise subject us to liability under laws and regulations that protect the privacy and security of personal information, which could result in significant legal and financial exposure and reputational damages that could potentially have an adverse effect on our business.

A pandemic, epidemic or outbreak of an infectious disease, such as COVID-19, may materially and adversely affect our business and could cause a disruption to the development of our therapeutic candidates.

The ongoing COVID-19 pandemic has broadly affected the global economy, resulted in significant travel and work restrictions in many regions and has put a significant strain on healthcare resources. The ultimate extent of the impact of the COVID-19 pandemic on our business, financial condition and results of operations is highly uncertain and will depend on continued developments and actions taken by government authorities and businesses to contain or prevent the further spread of ongoing COVID-19. The continuation of the worldwide COVID-19 pandemic may affect our ability to initiate and complete preclinical studies, delay the initiation of our planned clinical trials, disrupt regulatory activities or have other adverse effects on our business, results of operations, financial condition and prospects. In addition, the COVID-19 pandemic has adversely impacted economies worldwide and may cause substantial disruption in the financial markets, both of which could adversely affect our business, operations and ability to raise funds to support our operations.

To date, we have not experienced a material financial impact or significant business disruptions, including with our vendors, or impairments of any of our assets as a result of the ongoing COVID-19 pandemic. We are following, and plan to continue to follow, recommendations from federal, state and local governments regarding workplace policies, practices and procedures. We have taken temporary precautionary measures intended to help minimize the risk of the virus to our employees, including limiting on-site presence to essential employees, providing for social distancing, increased sanitization of our facilities and providing personal protective equipment for our employees. We expect to continue to take actions as may be required or recommended by government authorities or as we determine are in the best interests of our employees and other business partners. We are continuing to monitor the potential impact of the COVID-19 pandemic, but even though many states within the U.S. are easing COVID-19 related restrictions, we cannot be certain what the overall impact of the ongoing COVID-19 pandemic will be on our business, financial condition, results of operations and prospects.

Risks Related to the Discovery, Development and Regulatory Approval of Our Therapeutic Candidates

We are early in our development efforts. We have never successfully completed any clinical trials, and if we are unable to identify and advance therapeutic candidates through preclinical studies and clinical trials, obtain marketing approval and ultimately commercialize them, or experience significant delays in doing so, our business will be materially harmed.

We are early in our development efforts, and we have not yet demonstrated our ability to successfully complete any clinical trials, including large-scale, pivotal clinical trials, obtain regulatory approvals, manufacture a commercial scale product, or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful commercialization. We have invested substantially all of our research efforts to date in identifying potential therapeutic candidates and conducting preclinical studies. As an organization, we have never conducted any interventional clinical trials, and we may be unable to do so for our therapeutic candidates. Our lead therapeutic candidate, VGL101, is our only product candidate in Phase 1 clinical development for ALSP. The FDA has cleared our IND to evaluate VGL101 in a Phase 1 trial in healthy volunteers at doses up to 20 mg/kg with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg. We do not believe the partial clinical hold will have a material impact on our current clinical development plans and timelines for our clinical trial in ALSP. We initiated our Phase 1 trial in December 2021, and pending safety results of the Phase 1 trial and discussions with the FDA, we plan to later evaluate VGL101 in a Phase 2/3 trial at doses up to 20 mg/kg based on our current dosing rationale for VGL101. In addition, we have a small molecule program that is in an earlier stage of development, for which we have not yet initiated or completed IND-enabling studies. We may never advance these or any future therapeutic candidates through IND-enabling studies or receive clearance from the FDA to commence clinical trials for our therapeutic candidates. Our ability to generate product revenue, which we do not expect will occur for many years, if ever, will depend heavily on the successful development and eventual commercialization of our therapeutic candidates, which may never occur. We currently generate no revenue from sales of any product, and we may never be able to develop or commercialize a marketable product.

[Table of Contents](#)

Commencing clinical trials in the U.S. is subject to acceptance by the FDA of an IND and finalizing the trial design based on discussions with the FDA and other regulatory authorities. For the FDA to accept an IND, we must complete toxicology and other preclinical studies pursuant to Good Laboratory Practices (GLPs), which may not be successful or may take longer than we expect. The FDA may require us to complete additional preclinical studies or we may be required to satisfy other FDA requests prior to commencing clinical trials, and such requests may not currently be known or anticipated, which may cause the start of our first clinical trials to be delayed or prevent us from conducting clinical trials. Even after we receive and incorporate guidance from these regulatory authorities, the FDA or other regulatory authorities could disagree that we have satisfied their requirements to commence any clinical trial or change their position on the acceptability of our trial design or the clinical endpoints selected, which may require us to complete additional preclinical studies or clinical trials, impose stricter conditions than we currently expect or may prevent us from conducting clinical trials. There are equivalent processes and risks applicable to clinical trial applications in other countries, including countries in the European Union (EU).

The success of therapeutic candidates we may identify and develop will depend on many factors, including:

- timely and successful completion of preclinical studies, including toxicology studies, biodistribution studies and minimally efficacious dose studies in animals, where applicable, in accordance with FDA's GLPs and any additional regulatory requirements from foreign regulatory authorities;
- successful initiation, enrollment and completion of clinical trials, including under the FDA's Good Clinical Practices (GCPs) and any additional regulatory requirements from foreign regulatory authorities;
- positive results from our future clinical trials that support a finding of safety and effectiveness and an acceptable risk-benefit profile in the intended populations;
- sufficiency of our financial and other resources to complete the necessary preclinical studies and clinical trials;
- receipt of regulatory marketing approvals from applicable regulatory authorities;
- effective INDs or comparable foreign applications that allow commencement of our planned clinical trials or future clinical trials for any therapeutic candidates we may develop;
- establishment of arrangements with third-party manufacturers for clinical supply and, where applicable, commercial manufacturing capabilities;
- establishment, maintenance, defense and enforcement of patent, trademark, trade secret and other intellectual property protection or regulatory exclusivity for any therapeutic candidates we may develop;
- patient recruitment, enrollment and retention;
- commercial launch of any therapeutic candidates we may develop, if approved, whether alone or in collaboration with others;
- acceptance of the benefits and use of our therapeutic candidates we may develop, including method of administration, if and when approved, by patients, the medical community and third-party payors;
- our ability to compete effectively with other therapies and treatment options;
- maintenance of a continued acceptable safety, tolerability and efficacy profile of any therapeutic candidates we may develop following approval; and
- establishment and maintenance of healthcare coverage and adequate reimbursement by payors.

If we do not succeed in one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully commercialize any therapeutic candidates we may develop,

which would materially harm our business. If we are unable to advance our therapeutic candidates to clinical development, obtain regulatory approval and ultimately commercialize our therapeutic candidates, or experience significant delays in doing so, our business will be materially harmed.

We may expend our limited resources to pursue a particular therapeutic candidate or indication, such as our initial focus on developing VGL101, and fail to capitalize on therapeutic candidates or indications that may be more profitable or for which there is a greater likelihood of success. As such, our business is highly dependent on the clinical advancement of our programs and is especially dependent on the success of our lead candidate, VGL101.

One of our strategies is to identify and pursue clinical development of additional therapeutic candidates. Given our limited human capital and financial resources, we must focus on research programs and therapeutic candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other therapeutic candidates or for other indications that later prove to have greater commercial potential. We are highly dependent on the success of the future clinical trials of VGL101, our lead therapeutic candidate, the outcomes of which are uncertain, to further develop our pipeline candidates for common neurodegenerative disease starting from patient segments with known genetic variations associated with microglial dysfunction. Because VGL101 is our first therapeutic candidate, if it encounters safety, efficacy, supply or manufacturing problems, developmental delays, regulatory or commercialization issues or other problems, the value of our platform could be greatly diminished and our development plans could be curtailed and our business would be significantly harmed.

Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and therapeutic candidates for specific indications may not yield any commercially viable therapeutic candidates. If we do not accurately evaluate the commercial potential or target market for a particular therapeutic candidate or misread trends in the biopharmaceutical industry, in particular for neurodegenerative diseases, we may relinquish valuable rights to that therapeutic candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such therapeutic candidate.

At any time and for any reason, we may determine that one or more of our discovery programs or pre-clinical or clinical therapeutic candidates or programs does not have sufficient potential to warrant the allocation of resources toward such program or therapeutic candidate. Accordingly, we may choose not to develop a potential therapeutic candidate or elect to suspend, deprioritize or terminate one or more of our discovery programs or preclinical or clinical therapeutic candidates or programs. Suspending, deprioritizing or terminating a program or therapeutic candidate in which we have invested significant resources, means we will have expended resources on a program that will not provide a full return on our investment and may have missed the opportunity to have allocated those resources to potentially more productive uses, including existing or future programs or therapeutic candidates.

We have concentrated a substantial portion of our research and development efforts on the treatment of neurodegenerative diseases, a field that has seen limited success in drug development. Further, our therapeutic candidates are based on new approaches and novel technology, which makes it difficult to predict the time and cost of therapeutic candidate development and subsequently obtaining regulatory approval.

We have focused our research and development efforts on therapeutic approaches for neurodegenerative diseases. Collectively, efforts by biopharmaceutical companies in the field of neurodegenerative diseases have seen limited success in drug development. No effective therapeutic options are available for patients with ALS, and limited options exist for Alzheimer's disease and other neurodegenerative diseases. Our future success is

[Table of Contents](#)

highly dependent on the successful development of our therapeutic candidates for treating neurodegenerative diseases. Developing our therapeutic candidates for treatment of neurodegenerative diseases subjects us to a number of challenges, including demonstrating safety and efficacy and obtaining regulatory approval from the FDA and other regulatory authorities who have only a limited set of precedents to rely on.

We are pursuing a precision medicine approach to developing a broad range of therapeutics for neurodegenerative diseases. By targeting rare genetically defined neurodegenerative microgliopathies, our strategy is to advance our pipeline by reducing downstream translational risk, efficiently generating clinical PoC and expanding into multiple neurodegenerative indications where microglia-based therapeutics may have meaningful impact on disease progression and patient lives. This strategy may not prove to be successful. We cannot be sure that our approach will yield satisfactory therapeutic products that are safe and effective, scalable, or profitable.

We may conduct clinical trials that utilize an “open-label” trial, which are subject to various limitations that may exaggerate any therapeutic effect as patients in open-label clinical trials are aware when they are receiving treatment.

We may conduct clinical trials that utilize an “open-label” trial design. An “open-label” clinical trial is one where both the patient and investigator know whether the patient is receiving the investigational therapeutic candidate or either an existing approved drug or placebo. Most typically, open-label clinical trials test only the investigational therapeutic candidate and sometimes may do so at different dose levels. Open-label clinical trials are subject to various limitations that may exaggerate any therapeutic effect as patients in open-label clinical trials are aware when they are receiving treatment. Open-label clinical trials may be subject to a “patient bias” where patients perceive their symptoms to have improved merely due to their awareness of receiving an experimental treatment. In addition, open-label clinical trials may be subject to an “investigator bias” where those assessing and reviewing the physiological outcomes of the clinical trials are aware of which patients have received treatment and may interpret the information of the treated group more favorably given this knowledge. The results from an open-label trial may not be predictive of future clinical trial results with any of our therapeutic candidates for which we include an open-label clinical trial when studied in a controlled environment with a placebo or active control.

We may fail to demonstrate safety and efficacy to the satisfaction of applicable regulatory authorities, which could prevent us from commercializing any therapeutic candidates we develop on a timely basis, if at all.

The risk of failure in developing therapeutic candidates is high. It is impossible to predict when or if any therapeutic candidate would prove effective or safe in humans or will receive regulatory approval. Before obtaining marketing approval from regulatory authorities for the sale of any therapeutic candidate, we must complete preclinical development, submit an IND or foreign equivalent to permit initiation of clinical studies, and then conduct extensive clinical trials to demonstrate the safety and efficacy of therapeutic candidates in humans. We initiated a first-in-human clinical trial for VGL101 in healthy volunteers in December 2021. We have identified a second rare microgliopathy, cALD, for which we plan to submit an IND amendment to our open IND to conduct a Phase 2 trial in the first half of 2023. We have not previously conducted any clinical trials of any therapeutic candidates, have limited experience as a company in preparing and submitting regulatory filings and have not previously submitted an IND, a new drug application (NDA), or a biologics license application (BLA), or other comparable foreign regulatory submission for any therapeutic candidate.

Before we can commence clinical trials for a therapeutic candidate, we must complete extensive preclinical testing and studies that support our INDs and other regulatory filings. We cannot be certain of the timely identification of a therapeutic candidate or the completion or outcome of our preclinical testing and studies and cannot predict whether the FDA will accept our proposed clinical programs or whether the

[Table of Contents](#)

outcome of our preclinical testing and studies will ultimately support the further development of any therapeutic candidates. Conducting preclinical testing is a lengthy, time-consuming and expensive process. The length of time may vary substantially according to the type, complexity and novelty of the program, and often can be several years or more per program. As a result, we cannot be sure that we will be able to submit INDs for our preclinical programs on the timelines we expect, if at all, and we cannot be sure that submission of INDs will result in the FDA allowing clinical trials to begin.

Clinical trials are expensive, difficult to design and implement and can take many years to complete, and their outcome is inherently uncertain. A failure of one or more clinical trials can occur at any stage of testing, which may result from a multitude of factors, including, but not limited to, flaws in trial design, dose selection issues, patient enrollment criteria and failure to demonstrate favorable safety or efficacy traits. No therapeutic has been approved for the treatment of ALSP and the regulatory pathway for approval of a therapeutic for ALSP is uncertain. Given the lack of precedent, we may encounter difficulties in identifying and establishing clinical endpoints that FDA would consider clinically meaningful. Moreover, we have had limited interactions with the FDA and cannot be certain how many clinical trials of VGL101 or any other therapeutic candidates will be required or how such trials should be designed. Even after the FDA has received and commented on the design for our clinical trials, the agency may disagree with our clinical trial design and our interpretation of data from clinical trials, or may change the requirements for approval. Consequently, despite future regulatory interactions and advice, we may be unable to successfully and efficiently execute and complete necessary clinical trials in a way that leads to regulatory submission and approval of any of our therapeutic candidates. Additionally, because our initial target indications are rare diseases, we may face challenges identifying patients and enrolling clinical trials, which may delay or prevent completion of such trials. Clinical trials also may fail to demonstrate that our therapeutic candidates are safe for humans and effective for indicated uses. Successful completion of clinical trials is a prerequisite to submitting an NDA or BLA to the FDA or similar marketing applications to other regulatory authorities for each therapeutic candidate. Even if the clinical trials are successful, changes in marketing approval policies during the development period, changes in or the enactment or promulgation of additional statutes, regulations or guidance or changes in regulatory review for each submitted product application may cause delays in the approval or rejection of an application.

Other events that may prevent successful enrollment, initiation or timely completion of clinical development include:

- we may be unable to generate sufficient preclinical, toxicology or other *in vivo* or *in vitro* data to support the initiation of clinical trials;
- delays in reaching a consensus with regulatory authorities on trial design;
- delays in reaching agreement on acceptable terms with prospective CROs and clinical trial sites;
- delays in opening clinical trial sites or obtaining required institutional review board (IRB) or independent ethics committee approval, or the equivalent review groups for sites outside the U.S., at each clinical trial site;
- imposition of a clinical hold by regulatory authorities, including as a result of a serious adverse event or after an inspection of our clinical trial operations or trial sites;
- challenges identifying, enrolling and retaining participants in clinical trials;
- negative or inconclusive results observed in clinical trials, including failure to demonstrate statistical significance, safety, purity or potency, which could lead us, or cause regulators to require us, to conduct additional clinical trials or abandon product development programs;
- failure by us, any CROs we engage or any other third parties to adhere to clinical trial requirements and clinical trial protocols or to perform in accordance with the FDA's GCPs;
- failure by physicians to adhere to delivery protocols leading to variable results;

Table of Contents

- delays in the testing, validation, manufacturing and delivery of any therapeutic candidates we may develop to the clinical sites, including delays by third parties with whom we have contracted to perform certain of those functions;
- failure of our third-party contractors to comply with regulatory requirements or to meet their contractual obligations to us in a timely manner, or at all;
- delays in having patients complete participation in a trial or return for post-treatment follow-up;
- issues with our clinical trial sites or patients dropping out of a trial;
- we may need to add new or additional clinical trial sites;
- selection of clinical endpoints that require prolonged periods of clinical observation or analysis of the resulting data;
- inability of selected endpoints to capture therapeutic benefit of the therapeutic candidate;
- occurrence of serious adverse events associated with the therapeutic candidate that are viewed to outweigh its potential benefits;
- occurrence of serious adverse events associated with a therapeutic candidate in development by another company, which are viewed to outweigh its potential benefits, and which may negatively impact the perception of our therapeutic candidate due to a similarity in technology or approach;
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols;
- the FDA or other regulatory authorities may require us to submit additional data such as long-term toxicology studies or impose other requirements before permitting us to initiate a clinical trial;
- changes in the legal or regulatory regimes domestically or internationally related to patient rights and privacy; or
- lack of adequate funding to continue the clinical trial.

We may encounter substantial delays in the commencement, enrollment or completion of our planned clinical trials, which could prevent us from receiving necessary regulatory approvals or commercializing any therapeutic candidates we develop on a timely basis, if at all.

We could encounter delays in our development plans when a clinical trial is suspended, placed on clinical hold or terminated by us, the IRBs of the institutions in which such trials are being conducted, or the FDA or other regulatory authorities or recommended for suspension or termination by the Data Safety Monitoring Board (DSMB) for such trial. A suspension or termination may be imposed due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a product candidate or treatment, failure to establish or achieve clinically meaningful trial endpoints, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. The FDA has cleared our IND to evaluate VGL101 in a Phase 1 trial in healthy volunteers at doses up to 20 mg/kg with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg. The partial clinical hold was placed based on the FDA's review of non-clinical data and in the absence of adverse drug-related effects up to the highest dose tested of 200 mg/kg, which was identified as the No Observed Adverse Effect Level (NOAEL) in our non-human primate toxicology study. We intend to submit our response based on our existing non-clinical data, in the first quarter of 2022 to address the FDA's feedback, which we believe will resolve the partial clinical hold. We do not believe the partial clinical hold will have a material impact on our current clinical development plans and timelines for our clinical trial in ALS. We initiated our Phase 1 trial in December 2021, and pending safety results of the Phase 1 trial and discussions with the FDA, we plan to later evaluate VGL101 in a Phase 2/3 trial at doses up to 20 mg/kg based

[Table of Contents](#)

on our current dosing rationale for VGL101. However, if changes in our understanding of the therapeutic concentrations of VGL101 necessitate exploration of doses higher than 20 mg/kg, and we are unable to reach agreement with the FDA to lift the partial clinical hold, we would be unable to complete our clinical trials of VGL101 in ALSP patients without delays in our clinical development plans and additional clinical development costs, which could impair our ability to obtain U.S. regulatory approval for VGL101.

Additionally, if the results of future clinical trials are inconclusive, we may be required to perform additional clinical trials to support approval. Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our therapeutic candidates.

Failure to locate and enroll a sufficient number of eligible patients to participate in clinical trials as required by the FDA or similar regulatory authorities outside the U.S. may delay or prevent us from initiating or continuing clinical trials for our therapeutic candidates. Because the target patient populations for some of our therapeutic candidates, in particular for rare diseases such as the ones on which we are initially focused, are relatively small, it may be difficult to successfully identify patients for inclusion in clinical trials, especially for the natural history study we began in September 2021. This is especially important as we intend to offer to the volunteers of our natural history study enrollment in our planned interventional clinical trial in patients with ALSP and therefore any potential delays in enrollment could have adverse consequences for our planned clinical development program for VGL101.

In addition, we may experience delays or disruptions in the initiation of or enrollment in our planned clinical trials due to the COVID-19 pandemic and changes in local site or IRB policies, availabilities of site staff, reprioritization of hospital resources, restricted access to healthcare professionals and testing sites and other containment measures or concerns among patients about participating in clinical trials during a pandemic. Furthermore, some of our competitors have ongoing clinical trials for therapeutic candidates that treat the same indications we plan to target with our therapeutic candidates, such as Alzheimer's disease, and patients who would otherwise be eligible for our clinical trials may instead enroll in clinical trials of our competitors' therapeutic candidates. Patient enrollment and trial competition may be affected by other factors including:

- clinicians' and patients' perceived risks and benefits of the therapeutic candidate under trial, particularly therapeutic candidates developed using a novel and unproven therapeutic approach, such as VGL101, in relation to available or investigational drugs;
- clinicians' misdiagnosis of patients with existing neurodegenerative diseases in our targeted indications and our inability to recruit these patients successfully;
- design of the trial protocol;
- efforts to facilitate timely enrollment in clinical trials;
- eligibility and exclusion criteria;
- availability of competing therapies and clinical trials;
- severity of the disease or disorder under investigation;
- proximity and availability of clinical trial sites for prospective patients;
- ability to obtain and maintain patient consent;
- size of the patient population required for analysis of the trial's primary endpoints;
- ability to recruit clinical trial investigators with the appropriate competencies and experience;
- risk that enrolled patients will drop out before completion of the trial;
- patient referral practices of physicians; and

[Table of Contents](#)

- ability to monitor patients adequately during and after treatment.

Our inability to identify patients appropriate for enrollment in our clinical trials, or to enroll a sufficient number of patients in our clinical trials, specifically our natural history study, would result in significant delays and could require us to abandon one or more clinical trials altogether. Enrollment delays in our clinical trials may result in increased development costs for our therapeutic candidates, which would cause the value of our company to decline and limit our ability to obtain additional financing. If we are unable to include symptomatic patients with the applicable genetic mutations and/or variations, this could limit our ability to seek participation in the FDA's expedited development programs, including breakthrough therapy designation and fast track designation, or otherwise to seek to accelerate clinical development and regulatory timelines.

Even if we are able to enroll a sufficient number of patients for our clinical trials, we may have difficulty retaining patients in our clinical trials. In our planned clinical trials that will include a placebo group, some of patients may perceive that they are not receiving the therapeutic candidate being tested, and they may decide to withdraw from our clinical trials to pursue other alternative therapies rather than continue the trial with the perception that they are receiving placebo. Difficulty enrolling or retaining a sufficient number of patients to conduct our clinical trials, may require us to delay, limit or terminate clinical trials, any of which would harm our business, financial condition, results of operations and prospects.

Our product development costs will increase if we experience delays in clinical testing or marketing approvals. Our preclinical studies or clinical trials may not begin as planned, may need to be restructured or may not be completed on schedule, or at all. Significant preclinical study or clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize our therapeutic candidates and may allow our competitors to bring products to market before we do, potentially impairing our ability to successfully commercialize our therapeutic candidates and harming our business and results of operations.

Use of our therapeutic candidates could be associated with side effects, adverse events or other properties or safety risks, which could delay or preclude approval, cause us to suspend or discontinue clinical trials, abandon a therapeutic candidate, limit the commercial profile of an approved label or result in other significant negative consequences that could severely harm our business, prospects, operating results and financial condition.

We have not evaluated any of our therapeutic candidates in human clinical trials and there may be serious adverse events or undesirable side effects related to our therapeutic candidates. To our knowledge, no approved products target TREM2 and no competitive TREM2 agonists are in clinical development for ALSP. Moreover, it is impossible to predict when or if any therapeutic candidates we may develop will prove safe in humans. As is the case with biopharmaceuticals generally, it is likely that there may be side effects and adverse events associated with use of our therapeutic candidates. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics. Undesirable side effects caused by our therapeutic candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or comparable foreign regulatory authorities. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may significantly harm our business, financial condition and prospects.

Further, clinical trials by their nature utilize a sample of the potential patient population. With a limited number of patients and limited duration of exposure, rare and severe side effects of our therapeutic candidates may only be uncovered with a significantly larger number of patients exposed to the therapeutic candidate. Any undesirable side effects or unexpected characteristics associated with our therapeutic candidates in clinical trials may lead us to elect to abandon their development or limit their development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective, which may limit the commercial expectations for the therapeutic

[Table of Contents](#)

candidate, if approved. We may also be required to modify our trial plans based on findings after we commence our clinical trials. Many compounds that initially showed promise in early-stage testing have later been found to cause side effects that prevented further development of the compound. In addition, regulatory authorities may draw different conclusions or require additional testing to confirm these determinations.

As we test our therapeutic candidates in larger, longer and more extensive clinical trials, or as the use of these therapeutic candidates becomes more widespread if they receive regulatory approval, illnesses, injuries, discomforts and other adverse events that were observed in earlier trials, as well as conditions that did not occur or went undetected in previous trials, may be reported. Any findings of such side effects later in development or following any approval may harm our business, financial condition and prospects significantly.

Patients treated with our therapeutics, if approved, may experience previously unreported adverse reactions, and the FDA or other regulatory authorities may ask for additional safety data as a condition of, or in connection with, our efforts to obtain approval of our therapeutic candidates.

If safety problems occur or are identified after our therapeutics reach the market, if any, we may make the decision or be required by regulatory authorities to amend the labeling of our therapeutics, recall our therapeutics or even withdraw approval for our therapeutics.

If there are safety concerns or serious adverse events associated with any therapeutic candidates we may develop, we may:

- be delayed in obtaining marketing approval for therapeutic candidates, if at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or safety warnings;
- be subject to changes in the way the product is administered;
- be required to perform additional clinical trials to support approval or be subject to additional post- marketing testing requirements;
- have regulatory authorities withdraw, or suspend, their approval of the product or impose restrictions on its distribution in the form of a modified risk evaluation and mitigation strategy (REMS);
- be subject to the addition of labeling statements, such as warnings or contraindications;
- be sued; or
- experience damage to our reputation.

Our therapeutic candidates are subject to extensive regulation and compliance, which is costly and time-consuming, and such regulation may cause unanticipated delays or prevent the receipt of the required approvals to commercialize our therapeutic candidates.

The clinical research, development, manufacturing, labeling, packaging, storage, record-keeping, advertising, promotion, import, export, marketing, distribution and adverse event reporting, including the submission of safety and other information, of our therapeutic candidates are subject to extensive regulation by the FDA in the U.S. and by comparable foreign regulatory authorities in foreign markets. In the U.S., we are not permitted to market our therapeutic candidates until we receive regulatory approval from the FDA. The process of obtaining regulatory approval is expensive, often takes many years following the commencement of clinical trials and can vary substantially based upon the type, complexity and novelty of the therapeutic candidates involved, as well as the target indications and patient population. Approval policies or regulations may change, and the FDA has substantial discretion in the drug approval process, including the ability to delay, limit or deny

approval of a therapeutic candidate for many reasons. Despite the time and expense invested in clinical development of therapeutic candidates, regulatory approval is never guaranteed. Neither we nor any current or future collaborator is permitted to market any of our therapeutic candidates in the U.S. until we receive approval from the FDA.

The FDA or comparable foreign regulatory authorities can delay, limit or deny approval of a therapeutic candidate for many reasons, including:

- we or any of our current or future collaborators may be unable to demonstrate that a therapeutic candidate is safe and effective, and that therapeutic candidate's clinical and other benefits outweigh its safety risks;
- serious and unexpected drug-related side effects may be experienced by participants in our clinical trials or by individuals using drugs similar to our therapeutic candidates;
- such authorities may disagree with the design or implementation of our or our current or future collaborators' clinical trials;
- negative or ambiguous results from our clinical trials or results may not meet the level of statistical significance required by the FDA or comparable foreign regulatory agencies for approval;
- such authorities may not accept clinical data from trials which are conducted at clinical facilities or in countries where the standard of care is potentially different from that of the U.S.;
- such authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- such authorities may not agree that the data collected from clinical trials of our therapeutic candidates are acceptable or sufficient to support the submission of an NDA or BLA or other submission or to obtain regulatory approval in the U.S. or elsewhere, and such authorities may impose requirements for additional preclinical studies or clinical trials;
- such authorities may disagree regarding the formulation, labeling and/or the specifications of our therapeutic candidates;
- approval may be granted only for indications that are significantly more limited than what we apply for and/or with other significant restrictions on distribution and use;
- such authorities may find deficiencies in the manufacturing processes, approval policies or facilities of our third-party manufacturers with which we or any of our current or future collaborators contract for clinical and commercial supplies;
- regulations of such authorities may significantly change in a manner rendering our or any of our potential future collaborators' clinical data insufficient for approval; or
- such authorities may not accept a submission due to, among other reasons, the content or formatting of the submission.

With respect to foreign markets, approval procedures vary among countries and, in addition to the foregoing risks, may involve additional product testing, administrative review periods and agreements with pricing authorities. In addition, events raising questions about the safety of certain marketed biopharmaceuticals may result in increased cautiousness by the FDA and comparable foreign regulatory authorities in reviewing new drugs based on safety, efficacy or other regulatory considerations and may result in significant delays in obtaining regulatory approvals. Any delay in obtaining, or inability to obtain, applicable regulatory approvals would prevent us or any of our potential future collaborators from commercializing our therapeutic candidates.

The results of preclinical studies are not necessarily predictive of the results of later preclinical studies and any clinical trials of our therapeutic candidates, and interim, topline and preliminary data from our

preclinical studies and planned clinical trials that we announce or publish from time to time may change as more data become available and are subject to audit and verification procedures that could result in material changes in the final data.

The results from preclinical studies of a therapeutic candidate may not predict the results of later preclinical studies and any clinical trials of the therapeutic candidate. Therapeutic candidates in later stages of clinical trials may fail to show the desired safety and efficacy characteristics despite having progressed through preclinical studies and initial clinical trials. In particular, while we have conducted certain preclinical studies of VGL101 and other potential therapeutic candidates, we do not know whether VGL101 or the other potential therapeutic candidates will perform in future clinical trials as they have performed in prior preclinical studies. The positive results we have observed for our therapeutic candidates in early, GLP and non-GLP preclinical studies, animal and *in vitro* models may not be predictive of our future clinical trials in humans. This may be a result of technical challenges unique to that program or due to biology risk, which is unique to every program. As we progress our programs through clinical development, there may be new technical challenges that arise that cause an entire program to fail. Furthermore, for some indications that we are pursuing there are no animal models that adequately mirror the human disease to predict any level of positive results. Unexpected observations or toxicities observed in these studies, or in IND-enabling studies for any of our other development programs, could delay clinical trials for VGL101 or our other development programs.

From time to time, we may publicly disclose interim, preliminary or topline data from our preclinical studies and planned clinical trials, which are based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. Topline data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, topline data should be viewed with caution until the final data are available. Additionally, interim, topline or preliminary data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Adverse differences between preliminary, topline or interim data and final data could significantly harm our business prospects.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular therapeutic candidate or product and the value of our company in general. A number of companies in the biopharmaceutical and biotechnology industries have suffered significant setbacks in clinical development even after achieving promising results in earlier studies, and companies that have believed their therapeutic candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain FDA approval. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial will be based on what is typically extensive information, and you or others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure, and any information we determine not to disclose may ultimately be deemed significant with respect to future decisions, conclusions, views, activities or otherwise regarding a particular product, therapeutic candidate or our business. If the topline data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, our therapeutic candidates may be harmed, which could harm our business, operating results, prospects or financial condition.

We may not be successful in our efforts to expand our pipeline of therapeutic candidates.

We believe the central role that microglia play in sensing and coordinating the response to tissue damage and disease provides therapeutic opportunities for many neurodegenerative diseases, either through TREM2 activation or potentially other microglia targets. Over time, we plan to expand our pipeline, either through

[Table of Contents](#)

internal discovery and development, or through strategic collaborations or alliances with academic organizations, pharmaceutical or biotechnology companies.

Although our research and development efforts to date have resulted in a pipeline of potential programs and therapeutic candidate, we may not be able to identify other microglia targets and develop therapeutic candidates. We may also pursue opportunities to acquire or in-license additional businesses, technologies or therapeutic candidates, form strategic alliances or create joint ventures with third parties to complement or augment our existing business. However, we may not be able to identify any therapeutic candidates for our pipeline through such acquisition or in-license.

Even if we are successful in continuing to build and expand our pipeline, the potential therapeutic candidates that we identify may not be suitable for clinical development. For example, they may be shown to have harmful side effects or other characteristics that indicate that they are unlikely to be drugs that will be successful in clinical trials or receive marketing approval and achieve market acceptance. If we do not successfully develop and commercialize therapeutic candidates, we will not be able to obtain drug revenues in future periods, which likely would result in significant harm to our financial position and adversely affect our stock price.

Clinical trial and product liability lawsuits against us could divert our resources, could cause us to incur substantial liabilities and could limit commercialization of any therapeutic candidates we may develop.

We will face an inherent risk of clinical trial and product liability exposure related to the testing of any therapeutic candidates we may develop in clinical trials, and we will face an even greater risk if we commercially sell any products that we may develop. While we currently have no therapeutic candidates in clinical trials or that have been approved for commercial sale, the future use of therapeutic candidates by us in clinical trials, and the sale of any approved products in the future, may expose us to liability claims. These claims might be made by patients that use the product, healthcare providers, pharmaceutical companies or others selling such products. If we cannot successfully defend ourselves against claims that our therapeutic candidates or products caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any therapeutic candidates we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants and inability to continue clinical trials;
- initiation of investigations by regulators;
- significant costs to defend any related litigation;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue;
- exhaustion of any available insurance and our capital resources;
- decline in our stock price;
- reduced resources of our management to pursue our business strategy; and
- the inability to commercialize any therapeutic candidates we may develop.

We will need to increase our insurance coverage if we commence clinical trials or if we commence commercialization of any therapeutic candidates. Insurance coverage is increasingly expensive. We may not be

able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise. If and when coverage is secured, our insurance policies may also have various exclusions and we may be subject to a product liability claim for which we have no coverage.

Even if our agreements with any future corporate collaborators entitle us to indemnification against losses, such indemnification may not be available or adequate should any claim arise, nor would such indemnity insulate us from potential reputational damage. If a successful clinical trial or product liability claim or series of claims is brought against us for uninsured liabilities or in excess of insured liabilities, our assets may not be sufficient to cover such claims and our business operations could be impaired.

We may develop our current or future therapeutic candidates in combination with other therapies, which would expose us to additional risks.

We may develop our current or potential future therapeutic candidates in combination with one or more currently approved therapies or therapies in development. Even if any of our current or future therapeutic candidates were to receive marketing approval or be commercialized for use in combination with other existing therapies, we would continue to be subject to the risks that the FDA, EMA or other comparable foreign regulatory authorities could revoke approval of the therapy used in combination with any of our therapeutic candidates, or safety, efficacy, manufacturing or supply issues could arise with these existing therapies. In addition, it is possible that in the future, existing therapies with which our therapeutic candidates are then approved for use could themselves fall out of favor or be relegated to later lines of treatment. This could result in the need to identify other combination therapies for our therapeutic candidates or our own products being removed from the market or being less successful commercially.

We may also evaluate our current or future therapeutic candidates in combination with one or more other therapies that have not yet been approved for marketing by the FDA, EMA or comparable foreign regulatory authorities. We will not be able to market and sell any therapeutic candidate in combination with any such unapproved therapies that do not ultimately obtain marketing approval.

Furthermore, we cannot be certain that we will be able to obtain a steady supply of such therapies for use in developing combinations with our therapeutic candidates on commercially reasonable terms or at all. Any failure to obtain such therapies for use in clinical development and the expense of purchasing therapies in the market may delay our development timelines, increase our costs and jeopardize our ability to develop our therapeutic candidates as commercially viable therapies. If the FDA, EMA or other comparable foreign regulatory authorities do not approve or withdraw their approval of these other therapies, or if safety, efficacy, commercial adoption, manufacturing or supply issues arise with the therapies we choose to evaluate in combination with any of our current or future therapeutic candidates, we may be unable to obtain approval of or successfully market any one or all of the current or future therapeutic candidates we develop. Additionally, if the third-party providers of therapies or therapies in development used in combination with our current or future therapeutic candidates are unable to produce sufficient quantities for clinical trials or for commercialization of our current or future therapeutic candidates, or if the cost of combination therapies are prohibitive, our development and commercialization efforts would be impaired, which would have an adverse effect on our business, financial condition, results of operations and growth prospects.

Where appropriate, we plan to secure approval from the FDA, EMA or comparable foreign regulatory authorities through the use of accelerated approval pathways. If we are unable to obtain such approval, we may be required to conduct additional preclinical studies or clinical trials beyond those that we contemplate, which could increase the expense of obtaining, and delay the receipt of, necessary marketing approvals. Even if we receive accelerated approval from the FDA, EMA or comparable regulatory authorities, if our confirmatory trials do not verify clinical benefit, or if we do not comply with rigorous post-marketing requirements, the FDA, EMA or such other regulatory authorities may seek to withdraw the accelerated approval.

Where possible, we plan to pursue accelerated development strategies in areas of high unmet need. We may seek an accelerated approval pathway for our one or more of our therapeutic candidates from the FDA, EMA or comparable foreign regulatory authorities. Under the accelerated approval provisions in the Federal Food, Drug, and Cosmetic Act, and the FDA's implementing regulations, the FDA may grant accelerated approval to a therapeutic candidate designed to treat a serious or life-threatening condition that provides meaningful therapeutic benefit over available therapies upon a determination that the therapeutic candidate has an effect on a surrogate endpoint or intermediate clinical endpoint that is reasonably likely to predict clinical benefit. The FDA considers a clinical benefit to be a positive therapeutic effect that is clinically meaningful in the context of a given disease, such as irreversible morbidity or mortality. For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign, or other measure that is thought to predict clinical benefit, but is not itself a measure of clinical benefit. An intermediate clinical endpoint is a clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit. The accelerated approval pathway may be used in cases in which the advantage of a new drug over available therapy may not be a direct therapeutic advantage, but is a clinically important improvement from a patient and public health perspective. If granted, accelerated approval is usually contingent on the sponsor's agreement to conduct, in a diligent manner, additional post-approval confirmatory studies to verify and describe the drug's clinical benefit. If such post-approval studies fail to confirm the drug's clinical benefit, the FDA may withdraw its approval of the drug.

Prior to seeking accelerated approval, we will seek feedback from the FDA, EMA or comparable foreign regulatory authorities and will otherwise evaluate our ability to seek and receive such accelerated approval. There can be no assurance that after our evaluation of the feedback and other factors we will decide to pursue or submit an NDA or BLA for accelerated approval or any other form of expedited development, review or approval. Similarly, there can be no assurance that after subsequent feedback from the FDA, EMA or comparable foreign regulatory authorities, we will continue to pursue or apply for accelerated approval or any other form of expedited development, review or approval, even if we initially decide to do so. Furthermore, if we decide to submit an application for accelerated approval, there can be no assurance that such application will be accepted or that any approval will be granted on a timely basis, or at all. The FDA, EMA or other comparable foreign regulatory authorities could also require us to conduct further studies prior to considering our application or granting approval of any type, including, for example, if other products are approved via the accelerated pathway and subsequently converted by FDA to full approval. A failure to obtain accelerated approval or any other form of expedited development, review or approval for our therapeutic candidate would result in a longer time period to commercialization of such therapeutic candidate, could increase the cost of development of such therapeutic candidate and could harm our competitive position in the marketplace. Moreover, even if we are able to obtain accelerated approval for any of our therapeutic candidates, there is no guarantee that post-approval studies will be able to confirm the clinical benefit, which could cause FDA to withdraw our approval.

We may seek fast track designation, breakthrough therapy designation and/or orphan drug designation from the FDA or similar designations from other regulatory authorities for one or more of our therapeutic candidates. Even if one or more of our therapeutic candidates receive any of these designations, we may be unable to obtain or maintain the benefits associated with such designation.

The FDA has established various designations to facilitate more rapid and efficient development and approval of certain types of drugs. Such designations include fast track designation, breakthrough therapy designation, and orphan drug designation. Fast track designation is designed to facilitate the development and expedite the review of therapies for serious conditions that fill an unmet medical need. Programs with fast track designation may benefit from early and frequent communications with the FDA, potential priority review and the ability to submit a rolling application for regulatory review. Fast track designation applies to both the therapeutic candidate and the specific indication for which it is being studied. If any of our therapeutic candidates receive fast track designation but do not continue to meet the criteria for fast track designation, or if our clinical trials are delayed, suspended or terminated, or put on clinical hold due to unexpected adverse events or issues with clinical supply or due to other issues, we will not receive the benefits associated with the fast track program. Fast track designation alone does not guarantee qualification for the FDA's priority review procedures.

A breakthrough therapy, on the other hand, is defined as a drug or biologic that is intended, alone or in combination with one or more other drugs or biologics, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the drug or biologic may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints. For therapeutic candidates that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Designation as a breakthrough therapy is within the discretion of the FDA, and drugs designated as breakthrough therapies by the FDA may also be eligible for other expedited approval programs, including accelerated approval. Even if one or more of our therapeutic candidates qualify as breakthrough therapies pursuant to FDA standards, the FDA may later decide that the product no longer meets the conditions for qualification. Thus, even though we may seek breakthrough therapy designation for one or more of our current or future therapeutic candidates, there can be no assurance that we will receive breakthrough therapy designation.

Regulatory authorities in some jurisdictions, including the U.S. and the EU, may also designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a therapeutic candidate as an orphan drug if it is a drug intended to treat a rare condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the U.S., or a patient population greater than 200,000 in the U.S. where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the U.S. In the EU, the EMA's Committee for Orphan Medicinal Products (COMP) evaluates orphan drug designation to promote the development of products that are intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the EU. In the U.S., orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user-fee waivers, and it may entitle the therapeutic to exclusivity in the U.S. and the EU. Regulatory authorities may not grant our requests for orphan designation, or may require submission of additional data before making such determination. For example, we submitted a request for orphan drug designation of VGL101 in May 2021, and FDA has requested clinical or additional *in vivo* animal data to facilitate the agency's review of this request. Even if we obtain orphan drug designation for a therapeutic candidate, we may not be able to obtain or maintain orphan drug exclusivity for that therapeutic candidate.

If any of our programs or therapeutic candidates receive fast track, breakthrough therapy or orphan drug designation by the FDA or similar designations by other regulatory authorities, there is no assurance that we will receive any benefits from such programs or that we will continue to meet the criteria to maintain such designation. Even if we obtain such designations, we may not experience a faster development process, review or

approval compared to conventional FDA procedures. A fast track, breakthrough therapy, or orphan drug designation does not ensure that a therapeutic candidate will receive marketing approval or that approval will be granted within any particular timeframe. In addition, the FDA may withdraw any such designation if it believes that the designation is no longer supported by data from our clinical development program.

Risks Related to Our Reliance on Third Parties

We may be required to make significant payments under our license agreement with Amgen Inc. for certain TREM2 agonists, and, if we breach our license agreement with Amgen related to these TREM2 agonists, we could lose the ability to continue the development and commercialization of TREM2 agonists.

In July 2020, we acquired an exclusive, royalty-bearing license to certain intellectual property rights owned or controlled by Amgen, to commercially develop, manufacture, use, distribute and sell therapeutic products containing compounds that bind to TREM2 (the Amgen Agreement). Under the Amgen Agreement, in consideration for the license, we made an upfront payment of \$500,000 and also issued 6,928,566 shares of our Series A preferred stock to Amgen at the time of the initial closing with a subsequent 1,963,093 shares of our Series A preferred stock issued at the time of the milestone closing. As additional consideration for the license, we are required to pay Amgen up to \$80.0 million in the aggregate upon the achievement of specified regulatory milestones for the first monoclonal antibody TREM2 agonist (mAb) product and the first small molecule TREM2 agonist product and aggregate milestone payments of up to \$350.0 million upon the achievement of specific commercial milestones across all such mAb products and small molecule products. No regulatory or commercial milestones have been achieved to date under the license agreement. We are also required to pay tiered royalties of low to mid single-digit percentages on annual net sales of the products covered by the license. If milestone or other non-royalty obligations become due, we may not have sufficient funds available to meet our obligations, which will materially adversely affect our business operations and financial condition. For more information on the terms of the license agreement with Amgen, see “Business—Exclusive License Agreement with Amgen Inc.”

We are dependent on patents, know-how and proprietary technology in-licensed from Amgen. Our commercial success depends upon our ability to develop, manufacture, market and sell our therapeutic candidate or any future therapeutic candidates and use our and our licensor’s proprietary technologies without infringing the proprietary rights of third parties. Amgen may have the right to terminate the license agreement in full in the event we materially breach or default in the performance of any of the obligations under the license agreement. A termination of the license agreement with Amgen could result in the loss of significant rights and could harm our ability to develop and commercialize our therapeutic candidates.

Disputes may also arise between us and Amgen, as well as any future potential licensors, regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense patent and other rights to third parties under collaborative development relationships;
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our therapeutic candidate and what activities satisfy those diligence obligations; and
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners.

[Table of Contents](#)

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected therapeutic candidates.

In addition, the Amgen Agreement under which we currently license intellectual property is complex, and certain provisions may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property, or increase what we believe to be our financial or other obligations under the Amgen Agreement, either of which could have a material adverse effect on our business, financial condition, results of operations, and prospects. For example, under the Amgen Agreement, Amgen shall have the right to terminate the agreement if we are deemed to have directly or indirectly conducted, enabled or participated in any distracting program (as defined in the Amgen Agreement), and do not elect to add the program to the agreement. There could be disagreements on whether a certain program would be considered as a distracting program. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangement on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected therapeutic candidates, which could have a material adverse effect on our business, financial conditions, results of operations, and prospects.

We are generally also subject to all of the same risks with respect to protection of intellectual property that we license, as we are for intellectual property that we own, which are described below. If we or our licensors fail to adequately protect this intellectual property, our ability to commercialize products could suffer.

We rely, and expect to continue to rely, on third parties to conduct some or all aspects of our product manufacturing, research and preclinical and clinical testing, and these third parties may not perform satisfactorily.

We do not expect to independently conduct all aspects of our product manufacturing, research and preclinical and clinical testing. We currently rely, and expect to continue to rely, on third parties with respect to many of these items, including contract manufacturing organizations (CMOs) for the manufacturing of any therapeutic candidates we test in preclinical or clinical development, as well as CROs for the conduct of our preclinical testing and research and CROs for the conduct of our planned clinical trials. For instance, VGL101 is a monoclonal antibody and is produced from a recombinant cell line only by permitted CMOs as set forth in the Amgen Agreement, the replacement of which would need to be approved by Amgen. We have established non-exclusive relationships with these CMOs for the manufacturing of VGL101 drug substance and drug product, and other third parties for testing, fill finish, and packaging and labeling. Any of these third parties may terminate their engagements with us at any time. A need to enter into alternative arrangements could delay our product development activities. Delays in CMO production of VGL101 drug substance or drug product would delay our ability to conduct and complete clinical trials.

Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our responsibility to ensure compliance with all required regulations and study protocols. For example, for therapeutic candidates that we develop and commercialize on our own, we will remain responsible for ensuring that each of our IND-enabling studies and clinical trials are conducted in accordance with the study plan and protocols. Moreover, the FDA requires us to comply with GLPs for preclinical studies intended to support INDs and applications for marketing authorization, and with GCPs for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. Regulatory authorities enforce these GCP requirements through periodic inspections of trial sponsors, clinical investigators and trial sites. We also are required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov within specified timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions. If we or any of our CROs

[Table of Contents](#)

or other third parties, including trial sites, fail to comply with applicable GLPs or GCPs, the preclinical and clinical data generated in our preclinical studies and clinical trials may be deemed unreliable and the FDA, EMA or comparable foreign regulatory authorities may require us to suspend, place on clinical hold or terminate these trials or require us to perform additional preclinical studies or clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials complies with GCP regulations, or that applicable preclinical studies comply with GLPs. In addition, our clinical trials must be conducted with product produced under conditions that comply with the FDA's current Good Manufacturing Practices (cGMP). Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process.

Although we intend to design the clinical trials for any therapeutic candidates we may develop, CROs will conduct some or all of the clinical trials. As a result, many important aspects of our development programs, including their conduct and timing, will be outside of our direct control. Our reliance on third parties to conduct future preclinical studies and clinical trials will also result in less direct control over the management of data developed through preclinical studies and clinical trials than would be the case if we were relying entirely upon our own staff. Communicating with outside parties can also be challenging, potentially leading to mistakes as well as difficulties in coordinating activities. Outside parties may:

- have staffing difficulties;
- fail to comply with contractual obligations;
- experience regulatory compliance issues;
- undergo changes in priorities or become financially distressed; or
- form relationships with other entities, some of which may be our competitors.

These factors may materially adversely affect the willingness or ability of third parties to conduct our preclinical studies and clinical trials and may subject us to unexpected cost increases that are beyond our control. We expect to have to negotiate budgets and contracts with CROs and trial sites, which may result in delays to our development timelines and increased costs. In addition, any third parties conducting our clinical trials will not be our employees, and except for remedies available to us under our agreements with such third parties, we cannot control whether or not they devote sufficient time and resources to our clinical programs. If these CROs, and any other third parties we engage do not perform preclinical studies and future clinical trials in a satisfactory manner, if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, or if they breach their obligations to us or fail to comply with regulatory requirements, the development, regulatory approval and commercialization of any therapeutic candidates we may develop may be delayed, we may not be able to obtain regulatory approval and commercialize our therapeutic candidates or our development programs may be materially and irreversibly harmed. If we are unable to rely on preclinical and clinical data collected by our CROs and other third parties, we could be required to repeat, extend the duration of or increase the size of any preclinical studies or clinical trials we conduct and this could significantly delay commercialization and require greater expenditures.

These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other product development activities, which could affect their performance on our behalf. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to complete development of, obtain regulatory approval of or successfully commercialize our therapeutic candidates. As a result, our financial results and the commercial prospects for our therapeutic candidates would be harmed, our costs could increase and our ability to generate revenue could be delayed.

[Table of Contents](#)

Our failure or any failure by these third parties to comply with these regulations or to recruit a sufficient number of patients may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

For any violations of laws and regulations during the conduct of our preclinical studies and clinical trials, we could be subject to warning letters or enforcement action that may include civil penalties up to and including criminal prosecution.

If any of our relationships with these third-party CROs or others terminate, we may not be able to enter into arrangements with alternative CROs or other third parties or to do so on commercially reasonable terms. Switching or adding additional CROs involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new CRO begins work. As a result, delays may occur, which can materially impact our ability to meet our desired clinical development timelines. Though we carefully manage our relationships with our CROs, there can be no assurance that we will not encounter similar challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects. If third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our studies in accordance with regulatory requirements or our stated study plans and protocols, we will not be able to complete, or may be delayed in completing, the preclinical studies and clinical trials required to support future IND submissions and approval of any therapeutic candidates we may develop.

We are dependent on third-party vendors to provide certain licenses, products and services and our business and operations, including clinical trials, could be disrupted by problems with or challenges faced by our significant third-party vendors.

We engage a number of third-party suppliers and service providers to supply critical goods and services, such as contract research services, contract manufacturing services and information technology services. Disruptions to the business, financial stability or operations of these suppliers and service providers, including due to strikes, labor disputes or other disruptions to the workforce, for instance, if, as a result of the COVID-19 pandemic, employees are not able to come to work, or to their willingness and ability to produce or deliver such products or provide such services in a manner that satisfies the requirements put forth by the authorities, or in a manner that satisfies our own requirements, could affect our ability to develop and market our future therapeutic candidates on a timely basis. If these suppliers and service providers were unable or unwilling to continue to provide their products or services in the manner expected, or at all, we could encounter difficulty finding alternative suppliers. Even if we are able to secure appropriate alternative suppliers in a timely manner, costs for such products or services could increase significantly. Additionally, two vaccines for COVID-19 were granted Emergency Use Authorization by the FDA in late 2020 and early 2021, and one vaccine was approved in August 2021, and more may be authorized or approved in the future. The resultant demand for vaccines and potential for manufacturing facilities and materials to be commandeered under the Defense Production Act of 1950, or equivalent foreign legislation, may make it more difficult to obtain materials or manufacturing slots for the products needed for our clinical trials, which could lead to delays in these trials. Any of these events could adversely affect our results of operations and our business.

We depend, and may continue to depend on single-source suppliers for some of the components and materials used in the therapeutic candidates we are developing.

We depend, and may continue to depend, on single-source suppliers for some of the components and materials used in the therapeutic candidates we are developing. For example, we currently rely on a master services agreement with FUJIFILM (as defined in “Management’s Discussion and Analysis of Financial Condition and Results of Operations”) pursuant to which FUJIFILM is the sole provider to us of certain research,

development, testing and manufacturing services for certain of our product candidates, including VGL101 (the FUJIFILM Agreement). In the event the FUJIFILM Agreement is terminated, our ability to meet the desired clinical development timelines may be materially impacted and our business will be implicated. We cannot ensure that these suppliers or service providers will remain in business, have sufficient capacity or supply to meet our needs or that they will not be purchased by one of our competitors or another company that is not interested in continuing to work with us. Our use of single-source suppliers of raw materials, components, key processes and finished goods could expose us to several risks, including disruptions in supply, price increases or late deliveries. There are, in general, relatively few alternative sources of supply for substitute components. These vendors may be unable or unwilling to meet our future demands for our clinical trials or commercial sale. Establishing additional or replacement suppliers for these components, materials and processes could take a substantial amount of time and it may be difficult to establish replacement suppliers who meet regulatory requirements. Any disruption in supply from any single- source supplier or service provider could lead to supply delays or interruptions which would damage our business, financial condition, results of operations and prospects.

If we have to switch to a replacement supplier, the manufacture and delivery of any therapeutic candidates we may develop could be interrupted for an extended period, which could adversely affect our business. Establishing additional or replacement suppliers, if required, may not be accomplished quickly. If we are able to find a replacement supplier, the replacement supplier would need to be qualified and may require additional regulatory authority approval, which could result in further delay. While we seek to maintain adequate inventory of the single source components and materials used in our therapeutics, any interruption or delay in the supply of components or materials, or our inability to obtain components or materials from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demand for our investigational medicines.

We may enter into collaborations, licenses and other similar arrangements with third parties for the research, development and commercialization of certain of the therapeutic candidates we may develop. If any such arrangements are not successful, we may not be able to capitalize on the market potential of those therapeutic candidates.

We may seek third-party collaborators for the research, development and commercialization of certain of the therapeutic candidates we may develop. If we enter into any such arrangements with any third parties, we will likely have limited control over the amount and timing of resources that our partners dedicate to the development or commercialization of any therapeutic candidates we may seek to develop with them. Our ability to generate revenues from these arrangements will depend on the ability of such collaborators to successfully perform the functions assigned to them in these arrangements. We cannot predict the success of any arrangement that we enter into.

Collaborations involving our research programs or any therapeutic candidates we may develop pose numerous risks to us, including the following:

- collaborators may not pursue development and commercialization of any therapeutic candidates we may develop or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in the collaborator's strategic focus or available funding or external factors such as an acquisition that diverts resources or creates competing priorities;
- collaborators may delay programs, preclinical studies or clinical trials, provide insufficient funding for programs, preclinical studies or clinical trials, stop a preclinical study or clinical trial or abandon a therapeutic candidate, repeat or conduct new clinical trials or require a new formulation of a therapeutic candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with any therapeutic candidates we may develop if the collaborators believe that competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours;

Table of Contents

- collaborators may be acquired by a third party having competitive products or different priorities, causing the emphasis on our product development or commercialization program under such collaboration to be delayed, diminished or terminated;
- collaborators would have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not perform their obligations as expected;
- collaborators with marketing and distribution rights to one or more products may not commit sufficient resources to the marketing and distribution of such product or products;
- collaborators may not properly obtain, maintain, enforce or defend our intellectual property or proprietary rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our proprietary information or expose us to potential litigation;
- if a collaborator of ours is involved in a business combination, the collaborator might deemphasize or terminate the development or commercialization of any therapeutic candidate licensed to it by us;
- our collaborators' business or operations could be disrupted due to the ongoing COVID-19 pandemic or other reasons outside of our control, which could have an adverse impact on their development and commercialization efforts or the prospects of our collaboration;
- disputes may arise between the collaborators and us that result in the delay or termination of the research, development, or commercialization of any therapeutic candidates we may develop or that result in costly litigation or arbitration that diverts management attention and resources;
- we may lose certain valuable rights under certain circumstances, including if we undergo a change of control;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable therapeutic candidates we may develop; and
- collaboration agreements may not lead to development or commercialization of therapeutic candidates in the most efficient manner or at all.

If our collaborations do not result in the successful development and commercialization of therapeutic candidates, or if one of our collaborators terminates its agreement with us, we may not receive any future research funding or milestone or royalty payments pursuant to the collaboration arrangement. If we do not receive the funding we expect under these agreements, our development of therapeutic candidates could be delayed, and we may need additional resources to develop therapeutic candidates. In addition, if one of our collaborators terminates its agreement with us, we may find it more difficult to find a suitable replacement collaborator or attract new collaborators, and our development programs may be delayed or the perception of us in the business and financial communities could be adversely affected.

Furthermore, all of the risks relating to product development, regulatory approval and commercialization described in this prospectus apply to the activities of our collaborators.

These relationships, or those like them, may require us to incur non-recurring and other charges, increase our near- and long-term expenditures, issue securities that dilute our existing stockholders, or disrupt our management and business. In addition, we could face significant competition in seeking appropriate collaborators, and the negotiation process is time-consuming and complex. Our ability to reach a definitive collaboration agreement will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration, and the proposed collaborator's evaluation of several factors. If we license rights to any therapeutic candidates we or our collaborators may develop, we may

not be able to realize the benefit of such transactions if we are unable to successfully integrate them with our existing operations and company culture.

Risks Related to Our Intellectual Property

If we are unable to obtain and maintain patent protection for our therapeutic programs and other proprietary technologies we develop, or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize products and technology similar or identical to ours, and our ability to successfully commercialize our therapeutic programs and other proprietary technologies we may develop may be adversely affected.

Our success depends in large part on our ability to obtain and maintain patent protection in the U.S. and other countries with respect to our therapeutic programs and other proprietary technologies we may develop. In order to protect our proprietary position, we have filed and intend to file additional patent applications in the U.S. and abroad relating to our therapeutic programs and other proprietary technologies we may develop; however, there can be no assurance that any such patent applications will issue as granted patents or that a granted patent will provide sufficient coverage for our therapeutic programs. If we are unable to obtain or maintain patent protection with respect to our therapeutic programs and other proprietary technologies we may develop, our business, financial condition, results of operations and prospects could be materially harmed.

The patent prosecution process is expensive, time-consuming and complex, and we may not be able to file, prosecute, maintain, enforce, or license all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output in time to obtain patent protection. Although we enter into non-disclosure and confidentiality agreements with parties who have access to confidential or patentable aspects of our research and development output, such as our employees, corporate collaborators, outside scientific collaborators, CROs, contract manufacturers, consultants, advisors and other third parties, any of these parties may breach the agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection. In addition, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our inventions and the prior art allow our inventions to be patentable over the prior art. Furthermore, publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the U.S. and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot be certain that we or our licensors were the first to make the inventions claimed in any of our owned or licensed patents or pending patent applications, or that we or our licensors were the first to file for patent protection of such inventions.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has been the subject of much litigation in recent years. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our patent applications may not result in patents being issued which protect our therapeutic programs and other proprietary technologies we may develop or which effectively prevent others from commercializing competitive technologies and products. In particular, our ability to stop third parties from making, using, selling, offering to sell, or importing products that infringe our intellectual property will depend in part on our success in obtaining and enforcing patent claims that cover all of our technology, inventions and improvements. We do not currently have issued patents in the U.S. or other major markets that cover our technology or therapeutic candidates. With respect to both licensed and company-owned intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future. Moreover, even issued patents do not provide us with the right to practice our technology in relation to the commercialization of our therapeutics. The area of patent and other intellectual property rights in biotechnology is an evolving one with many risks and uncertainties, and third parties may have blocking patents that could be used to prevent us from commercializing our patented therapeutic candidates and practicing our proprietary technology. Our issued patent as well as patents that may issue in the future that we own or in-license may be

challenged, invalidated, or circumvented, which could limit our ability to stop competitors from marketing related products or limit the length of the term of patent protection that we may have for our therapeutic candidates. Furthermore, our competitors may independently develop similar technologies.

Additionally, issuance of a patent is not conclusive as to its inventorship, scope, validity, or enforceability and our patents may be challenged in the courts or patent offices in the U.S. and abroad. We may be subject to a third-party pre-issuance submission of prior art to the U.S. Patent and Trademark Office (USPTO) or in other jurisdictions, or become involved in opposition, derivation, revocation, reexamination, post-grant and *inter partes* review, or other similar proceedings challenging our patent rights. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate or render unenforceable, our patent rights, allow third parties to commercialize our therapeutic programs and other proprietary technologies we may develop and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us.

In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license, develop or commercialize current or future therapeutic candidates.

Our rights to develop and commercialize our therapeutic candidates are subject in part to the terms and conditions of a license granted to us by a third party. If we fail to comply with our obligations under our intellectual property license agreement, license agreements that we enter into in the future, or otherwise experience disruptions to our business relationships with our current or any future licensors, we could lose intellectual property rights that are important to our business.

We are and expect to continue to be reliant upon third-party licensors for certain patent and other intellectual property rights that are important or necessary to the development of our therapeutic programs, eventual therapeutic candidates, and proprietary technologies. For example, we rely on the Amgen Agreement for a license to technologies necessary for our monoclonal antibody TREM2 agonist program, including VGL101 and related molecules, intellectual property and manufacturing know-how, and our small molecule agonist program, including a portfolio of approximately 1,000 compounds. The Amgen Agreement imposes, and we expect that any future license agreement will impose, specified diligence, milestone payment, royalty, commercialization, development and other obligations on us and require us to meet development timelines, or to exercise diligent or commercially reasonable efforts to develop and commercialize licensed products, in order to maintain the licenses. For more information on the terms of the license agreement with Amgen, see “Business—Exclusive License Agreement with Amgen Inc.”

Furthermore, our licensors have, or may in the future have, the right to terminate a license if we materially breach the agreement and fail to cure such breach within a specified period or in the event we undergo certain bankruptcy events. In spite of our best efforts, our current or any future licensors might conclude that we have materially breached our license agreements and might therefore terminate the license agreements. If our license agreements are terminated, we may lose our rights to develop and commercialize therapeutic candidates and technology, lose patent protection, experience significant delays in the development and commercialization of our therapeutic candidates and technology, and incur liability for damages. If these in-licenses are terminated, or if the underlying intellectual property fails to provide the intended exclusivity, our competitors or other third parties could have the freedom to seek regulatory approval of, and to market, products and technologies identical or competitive to ours and we may be required to cease our development and commercialization of certain of our therapeutic candidates and technology. In addition, we may seek to obtain additional licenses from our licensors and, in connection with obtaining such licenses, we may agree to amend our existing licenses in a manner that may be more favorable to the licensors, including by agreeing to terms that could enable third parties

[Table of Contents](#)

, including our competitors, to receive licenses to a portion of the intellectual property that is subject to our existing licenses and to compete with any therapeutic candidates we may develop and our technology. Any of the foregoing could have a material adverse effect on our competitive position, business, financial condition, results of operations and prospects.

Disputes may arise regarding intellectual property subject to a licensing agreement, including:

- the scope of rights granted and obligations imposed under the license agreement and other interpretation-related issues;
- our or our licensors' ability to obtain, maintain and defend intellectual property and to enforce intellectual property rights against third parties;
- the extent to which our technology, therapeutic candidates and processes infringe, misappropriate or otherwise violate the intellectual property of the licensor that is not subject to the license agreement;
- the sublicensing of patent and other intellectual property rights under our license agreements;
- our diligence, development, regulatory, commercialization, financial or other obligations under the license agreement and what activities satisfy those diligence obligations;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our current or future licensors and us and our partners; and
- the priority of invention of patented technology.

In addition, any current or future license agreements to which we are a party, including our license agreement with Amgen, are likely to be complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our diligence, development, regulatory, commercialization, financial or other obligations under the relevant agreement. In addition, if disputes over intellectual property that we have licensed or any other dispute related to our license agreements prevent or impair our ability to maintain our current license agreements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected therapeutic candidates and technology. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

License agreements we may enter into in the future may be non-exclusive. Accordingly, third parties may also obtain non-exclusive licenses from such licensors with respect to the intellectual property licensed to us under such license agreements. Accordingly, these license agreements may not provide us with exclusive rights to use such licensed patent and other intellectual property rights, or may not provide us with exclusive rights to use such patent and other intellectual property rights in all relevant fields of use and in all territories in which we may wish to develop or commercialize our technology and any therapeutic candidates we may develop in the future.

Moreover, if some of our in-licensed patent and other intellectual property rights in the future become subject to third party interests such as co-ownership and we are unable to obtain an exclusive license to such third-party co-owners' interest, in such patent and other intellectual property rights, the third-party co-owners may be able to license their rights to other third parties, including our competitors, and our competitors could market competing products and technology. Additionally, we or our licensors may need the cooperation of any such co-owners of our licensed patent and other intellectual property rights in order to enforce them against third parties, and such cooperation may not be provided to us or our licensors.

Additionally, there could be instances where we may not have complete control over the preparation, filing, prosecution, maintenance, enforcement and defense of patents and patent applications that we license from third

parties. In such instances, it is possible that our licensors' filing, prosecution and maintenance of the licensed patents and patent applications, enforcement of patents against infringers or defense of such patents against challenges of validity or claims of enforceability may be less vigorous than if we had conducted them ourselves, and accordingly, we cannot be certain that these patents and patent applications will be prepared, filed, prosecuted, maintained, enforced and defended in a manner consistent with the best interests of our business. If our licensors fail to file, prosecute, maintain, enforce and defend such patents and patent applications, or lose rights to those patents or patent applications, the rights we may license may be reduced or eliminated, our right to develop and commercialize any of our technology and any therapeutic candidates we may develop that are the subject of such licensed rights could be adversely affected and we may not be able to prevent competitors or other third parties from making, using and selling competing products.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting, maintaining, enforcing and defending patents and other intellectual property rights on our technology and any therapeutic candidates we may develop in all jurisdictions throughout the world would be prohibitively expensive, and accordingly, our intellectual property rights in some jurisdictions outside the U.S. could be less extensive than those in the U.S. In some cases, we or our licensors may not be able to obtain patent or other intellectual property protection for certain technology and therapeutic candidates outside the U.S. In addition, the laws of some foreign jurisdictions do not protect intellectual property rights to the same extent as federal and state laws in the U.S. Consequently, we and our licensors may not be able to obtain issued patents or other intellectual property rights covering any therapeutic candidates we may develop and our technology in all jurisdictions outside the U.S. and, as a result, may not be able to prevent third parties from practicing our and our licensors' inventions in all countries outside the U.S., or from selling or importing products made using our inventions in and into the U.S. or other jurisdictions. For example, third parties may use our technologies in jurisdictions where we and our licensors have not pursued and obtained patent or other intellectual property protection to develop their own products and, further, may export otherwise infringing, misappropriating or violating products to territories where we have patent or other intellectual property protection, but enforcement is not as strong as that in the U.S.

Additionally, many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain jurisdictions, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biotechnology and pharmaceutical products, which could make it difficult for us to stop the infringement, misappropriation or other violation of our patent and other intellectual property rights or marketing of competing products in violation of our intellectual property rights generally. Proceedings to enforce our or our licensors' patent and other intellectual property rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patent and other intellectual property rights at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We or our licensors may not prevail in any lawsuits that we or our licensors initiate and, if we or our licensors prevail, the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Many jurisdictions also have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties, and, many jurisdictions limit the enforceability of patents against government agencies or government contractors. In these jurisdictions, the patent owner may have limited remedies, which could materially diminish the value of such patents. If we or any of our licensors is forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations and prospects may be adversely affected.

Issued patents covering therapeutic candidates we may develop could be found invalid or unenforceable if challenged in court or before administrative bodies in the U.S. or abroad.

Our owned and licensed patent rights may be subject to priority, validity, inventorship and enforceability disputes. If we or our licensors are unsuccessful in any of these proceedings, such patent rights may be narrowed, invalidated or held unenforceable. The foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

For example, if we or one of our licensors initiate legal proceedings against a third party to enforce a patent covering any of our therapeutic candidates or our technology, the defendant could counterclaim that the patent is invalid or unenforceable. In patent litigation in the U.S., defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, lack of written description or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld information material to patentability from the USPTO, or made a misleading statement, during prosecution. Third parties also may raise similar claims before administrative bodies in the U.S. or abroad, even outside the context of litigation. Such mechanisms include re-examination, interference proceedings, derivation proceedings, post grant review, *inter partes* review and equivalent proceedings such as opposition, invalidation and revocation proceedings in foreign jurisdictions. Such proceedings could result in the revocation or cancellation of or amendment to our patents in such a way that they no longer cover one or more of our therapeutic candidates or our technology or no longer prevent third parties from competing with any therapeutic candidates we may develop or our technology. The outcome following legal assertions of invalidity and unenforceability is unpredictable. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a distraction to management and other employees. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which the patent examiner and we or our licensing partners were unaware during prosecution. If a third party were to prevail on a legal assertion of invalidity or unenforceability, we could lose at least part, and perhaps all, of the patent protection on one or more of our therapeutic candidates or technology. Such a loss of patent protection could have a material adverse effect on our business, financial condition, results of operations and prospects.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment, and other requirements imposed by government patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees, and various other government fees on patents and applications will be due to be paid to the USPTO and various government patent agencies outside of the U.S. over the lifetime of our owned or licensed patents and applications. The USPTO and various non-U.S. government agencies require compliance with several procedural, documentary, fee payment and other similar provisions during the patent application process. In some cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in a partial or complete loss of patent rights in the relevant jurisdiction. In such an event, potential competitors might be able to enter the market with similar or identical products or technology, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Changes in patent law in the U.S. or worldwide could diminish the value of patents in general, thereby impairing our ability to protect any therapeutic candidates we may develop and our technology.

Changes in either the patent laws or interpretation of patent laws in the U.S. and worldwide, including patent reform legislation such as the Leahy-Smith America Invents Act (the Leahy-Smith Act), could increase the uncertainties and costs surrounding the prosecution of any owned or in-licensed patent applications and the maintenance, enforcement or defense of any current in-licensed issued patents and issued patents we may own or

in-license in the future. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These changes include provisions that affect the way patent applications are prosecuted, redefine prior art, provide more efficient and cost-effective avenues for competitors to challenge the validity of patents, and enable third-party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent at USPTO-administered post-grant proceedings, including post-grant review, *inter partes* review, and derivation proceedings. Assuming that other requirements for patentability are met, prior to March 2013, in the U.S., the first to invent the claimed invention was entitled to the patent, while outside the U.S., the first to file a patent application was entitled to the patent. After March 2013, under the Leahy-Smith Act, the U.S. transitioned to a first-to-file system in which, assuming that the other statutory requirements for patentability are met, the first inventor to file a patent application will be entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. As such, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of patents to issue based on our in-licensed patent applications and issued patents we may own or in-license in the future, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

The Leahy-Smith Act also includes a number of significant changes that may affect patent litigation. These include additional procedures to attack the validity of a patent by USPTO-administered post-grant proceedings, including post-grant review, *inter partes* review, and derivation proceedings. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim unpatentable even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to review patentability of our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. Therefore, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our owned or in-licensed patent applications and the enforcement or defense of our owned or in-licensed issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In addition, the patent positions of companies in the development and commercialization of biologics and pharmaceuticals are particularly uncertain. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. As one example, in the case *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, the U.S. Supreme Court held that certain claims to DNA molecules are not patentable simply because they have been isolated from surrounding material. Moreover, in 2012, the USPTO issued a guidance memo to patent examiners indicating that process claims directed to a law of nature, a natural phenomenon or a naturally occurring relation or correlation that do not include additional elements or steps that integrate the natural principle into the claimed invention such that the natural principle is practically applied and the claim amounts to significantly more than the natural principle itself should be rejected as directed to patent-ineligible subject matter. This combination of events has created uncertainty with respect to the validity and enforceability of patents once obtained. Depending on future actions by the U.S. Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could have a material adverse effect on our patent rights and our ability to protect, defend and enforce our patent rights in the future.

If we do not obtain patent term extension and data exclusivity for any therapeutic candidates we may develop, our business may be harmed.

Depending upon the timing, duration and specifics of any FDA marketing approval of any therapeutic candidates we may develop and our technology, our U.S. patent or one or more U.S. patents that may issue in the future based on a patent application that we license or may own may be eligible for limited patent term extension under Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent extension term of up to five years as compensation for patent term lost during the FDA regulatory review process. A patent term extension cannot

extend the remaining term of a patent beyond a total of 14 years from the date of product approval, only one patent may be extended and only those claims covering the approved product, a method for using it or a method for manufacturing it may be extended. The application for the extension must be submitted prior to the expiration of the patent for which extension is sought and within 60 days of FDA approval. A patent that covers multiple products for which approval is sought can only be extended in connection with one of the approvals. However, we may not be granted an extension because of, for example, failing to exercise due diligence during the testing phase or regulatory review process, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. In addition, to the extent we wish to pursue patent term extension based on a patent that we in-license from a third party, we would need the cooperation of that third party. If we are unable to obtain patent term extension or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our revenue could be reduced. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may be subject to claims challenging the inventorship or ownership of our patent and other intellectual property rights.

We or our licensors may be subject to claims that former employees, collaborators or other third parties have an interest in our owned or in-licensed patent rights, trade secrets or other intellectual property as an inventor or co-inventor. For example, we or our licensors may have inventorship disputes arise from conflicting obligations of employees, consultants or others who are involved in developing our therapeutic candidates or technology. Litigation may be necessary to defend against these and other claims challenging inventorship or our or our licensors' ownership of our owned or in-licensed patent rights, trade secrets or other intellectual property. If we or our licensors fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of or right to use intellectual property that is important to any therapeutic candidates we may develop or our technology. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may not be successful in obtaining necessary rights to a therapeutic candidate we may develop through acquisitions and in-licenses.

We currently own or exclusively license intellectual property rights covering certain aspects of our therapeutic programs. Other pharmaceutical companies and academic institutions may also have filed or are planning to file patent applications potentially relevant to our business. In order to avoid infringing these third-party patents, we may find it necessary or prudent to obtain licenses to such patents from such third-party intellectual property holders. However, we may be unable to secure such licenses or otherwise acquire or in-license any compositions, methods of use, processes or other intellectual property rights from third parties that we identify as necessary for our therapeutic programs and other proprietary technologies we may develop. The licensing or acquisition of third-party intellectual property rights is a competitive area, and several more established companies may pursue strategies to license or acquire third party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. If we are unable to successfully obtain rights to required third party intellectual property rights or maintain the existing intellectual property rights we have, we may have to abandon development of the relevant program or therapeutic candidate, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may be subject to claims that our employees, consultants or advisors have wrongfully used or disclosed alleged trade secrets of their current or former employers or claims asserting ownership of what we regard as our own intellectual property.

Some of our employees, consultants and advisors are currently or were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees, consultants and advisors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these individuals have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such individual's current or former employer. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to our management.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing, or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. Such claims could have a material adverse effect on our business, financial condition, results of operations and prospects.

Third-party claims of intellectual property infringement, misappropriation or other violations against us or our collaborators may prevent or delay the development and commercialization of our therapeutic programs and other proprietary technologies we may develop.

Our commercial success depends in part on our ability to avoid infringing, misappropriating and otherwise violating the patents and other intellectual property rights of third parties. There is a substantial amount of complex litigation involving patents and other intellectual property rights in the biotechnology and pharmaceutical industries, as well as administrative proceedings for challenging patents, including interference, derivation and reexamination proceedings before the USPTO or oppositions and other comparable proceedings in foreign jurisdictions. As discussed above, recently, due to changes in U.S. law referred to as patent reform, new procedures including *inter partes* review and post-grant review have also been implemented. As stated above, this reform adds uncertainty to the possibility of challenge to our patents in the future.

Numerous U.S. and foreign issued patents and pending patent applications owned by third parties exist in the fields in which we are commercializing or plan to commercialize our therapeutic programs and in which we are developing other proprietary technologies. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our therapeutic programs and commercializing activities may give rise to claims of infringement of the patent rights of others. We cannot assure you that our therapeutic programs and other proprietary technologies we may develop will not infringe existing or future patents owned by third parties. We may not be aware of patents that have already been issued and that a third party, for example, a competitor in the fields in which we are developing our therapeutic programs, might assert as infringed by us. It is also possible that patents owned by third parties of which we are aware or patents that may issue in the future from patent applications owned by third parties of which we are aware, but which we do not believe we infringe or that we believe we have valid defenses to any claims of patent infringement, could be found to be infringed by us, such as in connection with one or more of our therapeutic candidates. In addition, because patent applications can take many years to issue, and the scope of any patent claims that may ultimately issue are difficult to predict, there may be currently pending patent applications that may later result in issued patents that we may infringe and that, as a result, could harm our business.

[Table of Contents](#)

In the event that any third party claims that we infringe their patents or that we are otherwise employing their proprietary technology without authorization and initiates litigation against us, even if we believe such claims are without merit, a court of competent jurisdiction could hold that such patents are valid, enforceable and infringed by us. In this case, the holders of such patents may be able to block our ability to commercialize the infringing products or technologies unless we obtain a license under the applicable patents, or until such patents expire or are finally determined to be held invalid or unenforceable. Such a license may not be available on commercially reasonable terms or at all. Even if we are able to obtain a license, the license would likely obligate us to pay license fees or royalties or both, and the rights granted to us might be nonexclusive, which could result in our competitors gaining access to the same intellectual property. If we are unable to obtain a necessary license to a third-party patent on commercially reasonable terms, we may be unable to commercialize the infringing products or technologies or such commercialization efforts may be significantly delayed, which could in turn significantly harm our business.

Defense of infringement claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of management and other employee resources from our business, and may impact our reputation. In the event of a successful claim of infringement against us, we may be enjoined from further developing or commercializing the infringing products or technologies. In addition, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties and/or redesign our infringing products or technologies, which may be impossible or require substantial time and monetary expenditure. In that event, we would be unable to further develop and commercialize our therapeutic candidate or technologies, which could harm our business significantly. Further, we cannot predict whether any required license would be available at all or whether it would be available on commercially reasonable terms. We could be prevented from commercializing a product, or be forced to cease some aspect of our business operations, if, as a result of actual or threatened patent infringement claims, we are unable to enter into licenses on acceptable terms.

We may in the future pursue invalidity proceedings with respect to third-party patents. The outcome following legal assertions of invalidity is unpredictable. Even if resolved in our favor, these legal proceedings may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. If we do not prevail in the patent proceedings the third parties may assert a claim of patent infringement directed at our therapeutic candidates.

We may become involved in lawsuits to protect or enforce our patents and other intellectual property rights, which could be expensive, time-consuming and unsuccessful.

Third parties, such as a competitor, may infringe our patent rights. In an infringement proceeding, a court may decide that a patent owned by us is invalid or unenforceable or may refuse to stop the other party from using the invention at issue on the grounds that the patent does not cover the technology in question. In addition, our patent rights may become involved in inventorship, priority or validity disputes. To counter or defend against such claims can be expensive and time-consuming. An adverse result in any litigation proceeding could put our patent rights at risk of being invalidated or interpreted narrowly. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation.

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments, and if securities analysts or investors perceive these results to be negative, it could have a

[Table of Contents](#)

substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks.

We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential partners or customers in our markets of interest. At times, competitors or other third parties may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Our efforts to enforce or protect our proprietary rights related to trademarks, trade names, domain name or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely affect our business, financial condition, results of operations and prospects.

We may not be successful in obtaining or maintaining necessary rights to product components and processes for our development pipeline through acquisitions and in-licenses.

The growth of our business may depend in part on our ability to acquire, in-license or use third-party proprietary rights. For example, our therapeutic candidates may require specific formulations to work effectively and efficiently, we may develop therapeutic candidates containing our compounds and pre-existing pharmaceutical compounds, or we may be required by the FDA or comparable foreign regulatory authorities to provide a companion diagnostic test or tests with our therapeutic candidates, any of which could require us to obtain rights to use intellectual property held by third parties. We may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify as necessary or important to our business operations. In addition, we may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all. Were that to happen, we may need to cease use of the compositions or methods covered by those third-party intellectual property rights, and may need to seek to develop alternative approaches that do not infringe on those intellectual property rights, which may entail additional costs and development delays, even if we were able to develop such alternatives, which may not be feasible.

We, our collaborators and our service providers may be subject to a variety of privacy and data security laws and contractual obligations, which could increase compliance costs and our failure to comply with them could subject us to potentially significant fines or penalties and otherwise harm our business.

We maintain a large quantity of sensitive information, including confidential business and patient health information in connection with our preclinical studies, and are subject to laws and regulations governing the privacy and security of such information. The global data protection landscape is rapidly evolving, and we may be affected by or subject to new, amended or existing laws and regulations in the future, including as our operations continue to expand or if we operate in foreign jurisdictions. These laws and regulations may be subject to differing interpretations, which adds to the complexity of processing personal data. Guidance on implementation and compliance practices are often updated or otherwise revised.

In the U.S., there are numerous federal and state privacy and data security laws and regulations governing the collection, use, disclosure and protection of personal information, including health information privacy laws, security breach notification laws and consumer protection laws. Each of these laws is subject to varying interpretations and constantly evolving. By way of example, the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, imposes privacy and security requirements and breach reporting obligations with respect to individually identifiable health information upon “covered entities” (health plans, health care clearinghouses and certain health care providers), and their respective business associates (individuals or entities that create, received, maintain or transmit protected health information in connection with providing a service for or on behalf of a covered entity). Entities that are found to be in violation of HIPAA may be subject to significant civil, criminal and administrative fines and penalties and/or additional reporting and oversight obligations. Even when HIPAA does not apply, failing to take appropriate steps to keep consumers’ personal information secure may constitute unfair acts or practices in or affecting commerce in violation of Section 5(a) of the Federal Trade Commission Act (the FTCA), 15 U.S.C § 45(a). The FTC expects a company’s data security measures to be reasonable and appropriate in light of the sensitivity and volume of consumer information it holds, the size and complexity of its business and the cost of available tools to improve security and reduce vulnerabilities. Individually identifiable health information is considered sensitive data that merits stronger safeguards.

In addition, certain state laws govern the privacy and security of health information in certain circumstances, some of which are more stringent than HIPAA and many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts. For example, California enacted the California Consumer Privacy Act of 2018 (CCPA), which took effect on January 1, 2020 and became enforceable by the California Attorney General on July 1, 2020, and broadly defines personal information. The CCPA creates new individual privacy rights for consumers (as that term is broadly defined) and places increased privacy and security obligations on entities handling personal data of consumers or households. The CCPA requires covered companies to provide certain disclosures to California consumers about its data collection, use and sharing practices, provide such consumers with ways to opt-out of certain sales or transfers of personal information, provides for civil penalties for violations, and allows for a new private right of action for data breaches that has resulted in an increase in data breach litigation. Many aspects of the CCPA, including the expansion of the consumer rights granted therein under the California Privacy Rights Act (CPRA), and its interpretation remain unclear. As such, its full impact on our business and operations remains uncertain. Additionally, comprehensive privacy laws akin to the CCPA have recently been passed in Virginia and Colorado, and it is quite possible that other U.S. states will follow suit. New privacy and data security laws have been proposed in more than half of the states in the U.S. and in the U.S. Congress. The existence of comprehensive privacy laws in different states in the country will make our compliance obligations more complex and costly.

As we conduct studies with subjects from outside of the U.S., we may be subject to additional, more stringent privacy laws in other jurisdictions. Most notably, in the EU, in May 2018, a new privacy regime, the General Data Protection Regulation, the GDPR, took effect in the European Economic Area, the EEA. The GDPR governs the collection, use, disclosure, transfer or other processing of personal data of European persons. Among other things, the GDPR imposes new requirements regarding the security of personal data and notification of data processing obligations to the competent national data processing authorities, changes the lawful bases on which personal data can be processed, expands the definition of personal data and requires changes to informed consent practices, as well as more detailed notices for clinical trial subjects and investigators. In addition, the GDPR increases the scrutiny of transfers of personal data from clinical trial sites located in the EEA to the U.S. and other jurisdictions that the European Commission does not recognize as having “adequate” data protection laws, and imposes substantial fines for breaches and violations (up to the greater of €20 million or 4% of our consolidated annual worldwide gross revenue).

Moreover, the United Kingdom leaving the EU could also lead to further legislative and regulatory changes. In addition, further to the U.K.’s exit from the EU on January 31, 2020, the GDPR ceased to apply in the U.K. at the end of the transition period on December 31, 2020. However, as of January 1, 2021, the U.K.’s European

[Table of Contents](#)

Union (Withdrawal) Act 2018 incorporated the U.K. GDPR into U.K. law. The U.K. GDPR and the U.K. Data Protection Act 2018 set out the U.K.'s data protection regime. Non-compliance with the U.K. GDPR may result in monetary penalties of up to £17.5 million or 4% of worldwide revenue, whichever is higher.

As these privacy, data protection and data security laws continue to evolve, we may be required to make changes to our business, including by taking on more onerous obligations in our contracts, limiting our storage, transfer and processing of data and, in some cases, limiting our activities in certain locations. Changes in these laws may also increase our potential exposure through significantly higher potential penalties for non-compliance. In addition, due to the uncertainty and potentially conflicting interpretations of these laws, it is possible that such laws and regulations may be interpreted and applied in a manner that is inconsistent from one jurisdiction to another and may conflict with other rules or our practices. Any failure or perceived failure by us to comply with applicable laws or satisfactorily protect personal information could result in governmental enforcement actions, litigation, or negative publicity, any of which could inhibit our ability to grow our business.

Organizations are also increasingly subject to a wide variety of sophisticated attacks on their networks, systems and endpoints, including the theft and subsequent misuse of employee credentials, denial-of-service attacks, ransomware attacks, business email compromises, malware, viruses, and social engineering (including phishing). The techniques used to obtain unauthorized access or to sabotage systems, networks, or physical facilities in which data is stored or through which data is transmitted change frequently and generally are not identified until they are launched against a target. We and our third party service providers may be unable to anticipate these techniques or to implement adequate preventative measures.

Compromise of our data security or of third parties with whom we do business, failure to prevent or mitigate the loss of personal or business information and delays in detecting or providing prompt notice of any such compromise or loss could disrupt our operations, harm our reputation, subject us to litigation, government action or other additional costs and liabilities that could adversely affect our business, financial condition and operating results. Any reputational damage resulting from breach of our security measures could create distrust of our company. In addition, our insurance coverage may not be adequate to cover costs, expenses and losses associated with such events, and in any case, such insurance may not cover all of the types of costs, expenses and losses we could incur to investigate, respond to and remediate a security breach. As a result, we may be required to expend significant additional resources to protect against the threat of these disruptions and security breaches or to alleviate problems caused by such disruptions or breaches, including costs to deploy additional personnel and protection technologies, train employees, and engage third-party experts and consultants, which could materially and adversely affect our business, financial condition and results of operations.

Intellectual property rights do not necessarily address all potential threats.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to make products that are similar to our therapeutic candidate or utilize similar technology but that are not covered by the claims of the patents that we license or may own;
- we might not have been the first to make the inventions covered by our current or future patent applications;
- we might not have been the first to file patent applications covering our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that our current or future patent applications will not lead to issued patents;
- any patent issuing from our current or future patent applications may be held invalid or unenforceable, including as a result of legal challenges by our competitors or other third parties;

[Table of Contents](#)

- our competitors or other third parties might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;
- the patents of others may harm our business; and
- we may choose not to file for patent protection in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent application covering such intellectual property.

Risks Related to Government Regulation

Even if we obtain regulatory approval for any of our therapeutic candidates, we will still face extensive and ongoing regulatory requirements and obligations, which may result in significant additional expense, and any therapeutic candidates, if approved, may face future development and regulatory difficulties.

Any therapeutic candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, packaging, distribution, adverse event reporting, storage, recordkeeping, export, import, and advertising and promotional activities for such product, among other things, will be subject to extensive and ongoing requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, establishment registration and drug listing requirements, continued compliance with cGMP requirements relating to manufacturing, quality control, quality assurance, and corresponding maintenance of records and documents, compliance with applicable product tracking and tracing requirements, requirements regarding the distribution of samples to physicians and recordkeeping and GCP requirements for any clinical trials that we conduct post-approval.

Even if marketing approval of a therapeutic candidate is granted, the approval may be subject to limitations on the indicated uses for which the therapeutic candidate may be marketed or to the conditions of approval, including a requirement to implement a REMS. If a therapeutic candidate receives marketing approval, the accompanying label may limit the approved indicated use of the product, which could limit sales of the product. The FDA may also require costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of a product. The FDA closely regulates the post-approval marketing and promotion of drugs to ensure drugs are marketed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use, and if we market our products for uses beyond their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the Federal Food, Drug, and Cosmetic Act, relating to the promotion of prescription drugs, may lead to FDA enforcement actions and investigations alleging violations of federal and state healthcare fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products, manufacturers, or manufacturing processes or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on manufacturing such products;
- restrictions on the labeling or marketing of products;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- issuance of warning letters or untitled letters;
- refusal to approve pending applications or supplements to approved applications that we submit;

[Table of Contents](#)

- recalls or market withdrawals of products;
- fines, restitution, or disgorgement of profits or revenues;
- suspension or termination of ongoing clinical trials;
- suspension or withdrawal of marketing approvals;
- refusal to permit the import or export of our products;
- product seizure; or
- injunctions, consent decrees, or the imposition of civil or criminal penalties.

Obtaining and maintaining marketing approval or commercialization of our therapeutic candidates in the U.S. does not mean that we will be successful in obtaining marketing approval of our therapeutic candidates in other jurisdictions. Failure to obtain marketing approval in foreign jurisdictions would prevent any therapeutic candidates we may develop from being marketed in such jurisdictions, which, in turn, would materially impair our ability to generate revenue.

In order to market and sell any therapeutic candidates we may develop in the EU and many other foreign jurisdictions, we must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The regulatory approval process outside the U.S. generally includes all of the risks associated with obtaining FDA approval. In addition, in many countries outside the U.S., it is required that the product be approved for reimbursement before the product can be approved for sale in that country. We may not obtain approvals from regulatory authorities outside the U.S. on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside the U.S. does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA. We may not be able to file for marketing approvals and may not receive necessary approvals to commercialize our medicines in any jurisdiction, which would materially impair our ability to generate revenue.

Our relationships with healthcare providers, patients and third-party payors are subject to applicable anti-kickback, fraud and abuse and other healthcare laws and regulations, which could expose us to significant penalties, including criminal sanctions, civil penalties, exclusion from government healthcare programs, contractual damages, reputational harm and diminished profits and future earnings.

Although we do not currently have any drugs on the market, our current and future operations are subject to additional healthcare statutory and regulatory requirements and enforcement by the federal government and the states and foreign governments in which we conduct our business. Healthcare providers and third-party payors will play a primary role in the recommendation and prescription of VGL101 and future therapeutic candidates for which we obtain marketing approval. Our arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we research as well as market, sell and distribute VGL101 and future therapeutic candidates for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations, include the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, receiving, offering or paying any remuneration (including any kickback, bribe or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for, the purchase, lease, order, arrangement, or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid programs. A person or entity does not need to have actual knowledge of the federal Anti-Kickback Statute or specific intent to violate it to have committed a violation.

Violations are subject to civil and criminal fines and penalties for each violation, plus up to three times the remuneration involved, imprisonment, and exclusion from government healthcare programs. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act or federal civil money penalties;

- the federal civil and criminal false claims laws and civil monetary penalty laws, such as the federal False Claims Act, which impose criminal and civil penalties and authorize civil whistleblower or qui tam actions, against individuals or entities for, among other things: knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent; knowingly making, using or causing to be made or used, a false statement of record material to a false or fraudulent claim or obligation to pay or transmit money or property to the federal government or knowingly concealing or knowingly and improperly avoiding or decreasing an obligation to pay money to the federal government. Manufacturers can be held liable under the federal False Claims Act even when they do not submit claims directly to government payors if they are deemed to “cause” the submission of false or fraudulent claims. The federal False Claims Act also permits a private individual acting as a “whistleblower” to bring actions on behalf of the federal government alleging violations of the federal False Claims Act and to share in any monetary recovery;
- HIPAA, which created new federal criminal statutes that prohibit a person from knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false, fictitious, or fraudulent statements or representations in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters; similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH and their respective implementing regulations, including the Final Omnibus Rule published in January 2013, which impose requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates, independent contractors or agents of covered entities, that perform services for them that involve the creation, maintenance, receipt, use, or disclosure of, individually identifiable health information relating to the privacy, security and transmission of individually identifiable health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys’ fees and costs associated with pursuing federal civil actions. In addition, there may be additional federal, state and non-U.S. laws which govern the privacy and security of health and other personal information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts;
- the U.S. Physician Payments Sunshine Act and its implementing regulations, which requires certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children’s Health Insurance Program, with specific exceptions, to report annually to the Centers for Medicare & Medicaid Services information related to certain payments and other transfers of value to physicians, nurse practitioners, certified nurse anesthetists, physician assistants, clinical nurse specialists, and certified nurse midwives as well as teaching hospitals. Manufacturers are also required to disclose ownership and investment interests held by physicians and their immediate family members;

[Table of Contents](#)

- federal government price reporting laws, which require us to calculate and report complex pricing metrics in an accurate and timely manner to government programs; and
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm customers.

Additionally, we are subject to state and foreign equivalents of each of the healthcare laws and regulations described above, among others, some of which may be broader in scope and may apply regardless of the payor. Many U.S. states have adopted laws similar to the federal Anti-Kickback Statute and False Claims Act, and may apply to our business practices, including, but not limited to, research, distribution, sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental payors, including private insurers. In addition, some states have passed laws that require pharmaceutical companies to comply with the April 2003 Office of Inspector General Compliance Program Guidance for Pharmaceutical Manufacturers and/or the Pharmaceutical Research and Manufacturers of America's Code on Interactions with Healthcare Professionals. Several states also impose other marketing restrictions or require pharmaceutical companies to make marketing or price disclosures to the state and require the registration of pharmaceutical sales representatives. State and foreign laws, including for example the European Union General Data Protection Regulation, which became effective May 2018 also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts. There are ambiguities as to what is required to comply with these state requirements and if we fail to comply with an applicable state law requirement we could be subject to penalties. Finally, there are state and foreign laws governing the privacy and security of health information, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

The scope and enforcement of these laws is uncertain and subject to rapid change in the current environment of healthcare reform, especially in light of the lack of applicable precedent and regulations. Federal and state enforcement has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry. Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including administrative, civil and criminal penalties, damages, fines, disgorgement, the exclusion from participation in federal and state healthcare programs, reputational harm, and the curtailment or restructuring of our operations, as well as additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws. Further, defending against any such actions can be costly and time consuming, and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired. If any of the physicians or other providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs and individual imprisonment. If any of the above occur, our ability to operate our business and our results of operations could be adversely affected.

We are subject to certain U.S. and certain foreign anti-corruption, anti-money laundering, export control, sanctions and other trade laws and regulations. We can face serious consequences for violations.

U.S. and foreign anti-corruption, anti-money laundering, export control, sanctions and other trade laws and regulations prohibit, among other things, companies and their employees, agents, CROs, legal counsel, accountants, consultants, contractors and other partners from authorizing, promising, offering, providing, soliciting or receiving directly or indirectly, corrupt or improper payments or anything else of value to or from

recipients in the public or private sector. Violations of these laws can result in substantial criminal fines and civil penalties, imprisonment, the loss of trade privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm and other consequences. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities and other organizations. We also expect our non-U.S. activities to increase over time. We expect to rely on third parties for research, preclinical studies and clinical trials and/or to obtain necessary permits, licenses, patent registrations and other marketing approvals. We can be held liable for the corrupt or other illegal activities of our personnel, agents or partners, even if we do not explicitly authorize or have prior knowledge of such activities.

Any violations of the laws and regulations described above may result in substantial civil and criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm and other consequences.

Healthcare legislative reform discourse and potential or enacted measures may have a material adverse impact on our business and results of operations and legislative or political discussions surrounding the desire for and implementation of pricing reforms may adversely impact our business.

Payors, whether domestic or foreign, or governmental or private, are developing increasingly sophisticated methods of controlling healthcare costs and those methods are not always specifically adapted for new technologies such as gene therapy and therapies addressing rare diseases such as those we are developing. In both the U.S. and certain foreign jurisdictions, there have been a number of legislative and regulatory changes to the health care system that could impact our ability to sell our products profitably. In particular, in 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, the ACA, was enacted, which, among other things, subjected biologic products to potential competition by lower-cost biosimilars; addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected; increased the minimum Medicaid rebates owed by most manufacturers under the Medicaid Drug Rebate Program; extended the Medicaid Drug Rebate program to utilization of prescriptions of individuals enrolled in Medicaid managed care organizations; subjected manufacturers to new annual fees and taxes for certain branded prescription drugs; created a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% (increased to 70% pursuant to the Bipartisan Budget Act of 2018, effective as of January 1, 2019) point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D; and provided incentives to programs that increase the federal government's comparative effectiveness research.

Since its enactment, there have been numerous judicial, administrative, executive, and legislative challenges to certain aspects of the ACA. On June 17, 2021, the U.S. Supreme Court dismissed the most recent judicial challenge to the ACA brought by several states without specifically ruling on the constitutionality of the ACA. Prior to the Supreme Court's decision, President Biden issued an Executive Order to initiate a special enrollment period from February 15, 2021 through August 15, 2021 for purposes of obtaining health insurance coverage through the ACA marketplace. The Executive Order also instructed certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is unclear how other healthcare reform measures of the Biden administrations or other efforts, if any, to challenge repeal or replace the ACA, will impact our business.

In addition, other legislative and regulatory changes have been proposed and adopted in the U.S. since the ACA was enacted:

- On August 2, 2011, the U.S. Budget Control Act of 2011, among other things, included aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect

[Table of Contents](#)

on April 1, 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2030, with the exception of a temporary suspension from May 1, 2020 through December 31, 2021, unless additional Congressional action is taken.

- On January 2, 2013, the U.S. American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers.
- On April 13, 2017, Centers for Medicare & Medicaid Services, or CMS, an agency within the U.S. Department of Health and Human Services, published a final rule that gives states greater flexibility in setting benchmarks for insurers in the individual and small group marketplaces, which may have the effect of relaxing the essential health benefits required under the ACA for plans sold through such marketplaces.
- On May 30, 2018, the Right to Try Act, was signed into law. The law, among other things, provides a federal framework for certain patients to access certain investigational new drug products that have completed a Phase 1 clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a pharmaceutical manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act.
- On May 23, 2019, CMS published a final rule to allow Medicare Advantage Plans the option of using step therapy for Part B drugs beginning January 1, 2020.
- On December 20, 2019, former President Trump signed into law the Further Consolidated Appropriations Act (H.R. 1865), which repealed the Cadillac tax, the health insurance provider tax, and the medical device excise tax. It is impossible to determine whether similar taxes could be instated in the future.

Additionally, there has been increasing legislative and enforcement interest in the U.S. with respect to drug pricing practices. Specifically, there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under Medicare, and review the relationship between pricing and manufacturer patient programs.

At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing.

We expect that the ACA, as well as other healthcare reform measures that may be adopted in the future, may result in additional reductions in Medicare and other healthcare funding, more rigorous coverage criteria, lower reimbursement, and new payment methodologies. This could lower the price that we receive for our products. Any denial in coverage or reduction in reimbursement from Medicare or other government-funded programs may result in a similar denial or reduction in payments from private payors, which may prevent us from being able to generate sufficient revenue, attain profitability or commercialize our products. It is not clear how other future potential changes to the ACA will change the reimbursement model and market outlook for our current and future therapeutic candidates.

The commercial success of our therapeutic candidates will depend upon the degree of market acceptance of such therapeutic candidates by physicians, patients, healthcare payors and others in the medical community.

Our therapeutic candidates may not be commercially successful. Even if any of our therapeutic candidates receive regulatory approval, they may not gain market acceptance among physicians, patients, healthcare payors

or the medical community. The commercial success of any of our current or future therapeutic candidates will depend significantly on the broad adoption and use of the resulting product by physicians and patients for approved indications. The degree of market acceptance of our therapeutics will depend on a number of factors, including:

- demonstration of clinical efficacy and safety compared to other more-established products;
- the indications for which our therapeutic candidates are approved;
- the limitation of our targeted patient population and other limitations or warnings contained in any FDA-approved labeling;
- acceptance of a new drug for the relevant indication by healthcare providers and their patients;
- the pricing and cost-effectiveness of our therapeutics, as well as the cost of treatment with our therapeutics in relation to alternative treatments and therapies;
- our ability to obtain and maintain sufficient third-party coverage and adequate reimbursement from government healthcare programs, including Medicare and Medicaid, private health insurers and other third-party payors;
- the willingness of patients to pay all, or a portion of, out-of-pocket costs associated with our therapeutics in the absence of sufficient third-party coverage and adequate reimbursement;
- any restrictions on the use of our therapeutics, and the prevalence and severity of any adverse effects;
- potential product liability claims;
- the timing of market introduction of our therapeutics as well as competitive drugs;
- the effectiveness of our or any of our current or potential future collaborators' sales and marketing strategies; and
- unfavorable publicity relating to the product.

If any therapeutic candidate is approved but does not achieve an adequate level of acceptance by physicians, hospitals, healthcare payors or patients, we may not generate sufficient revenue from that product and may not become or remain profitable. Our efforts to educate the medical community and third-party payors regarding the benefits of our therapeutics may require significant resources and may never be successful.

Even if we are able to commercialize our therapeutic candidates, the products may not receive coverage and adequate reimbursement from third-party payors in the U.S. and in other countries in which we seek to commercialize our products, which could harm our business.

In the U.S. and markets in other countries, patients generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors is critical to new product acceptance. Our ability to successfully commercialize our therapeutic candidates will depend in part on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain pricing sufficient to realize a sufficient return on our investment. Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels.

There is also significant uncertainty related to the insurance coverage and reimbursement of newly approved products and coverage may be more limited than the purposes for which the medicine is approved by the FDA or comparable foreign regulatory authorities. In the U.S., the principal decisions about reimbursement for new medicines are typically made by the CMS. CMS decides whether and to what extent a new medicine will be covered and reimbursed under Medicare and private payors tend to follow CMS to a substantial degree.

[Table of Contents](#)

Factors payors consider in determining reimbursement are based on whether the product is:

- a covered benefit under its health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the U.S. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that reimbursement will be available for any therapeutic candidate that we commercialize and, if reimbursement is available, the level of reimbursement. In addition, many pharmaceutical manufacturers must calculate and report certain price reporting metrics to the government, such as average sales price, or ASP, and best price. Penalties may apply in some cases when such metrics are not submitted accurately and timely. Further, these prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the European Union provides options for its Member States to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. To obtain reimbursement or pricing approval, some of these countries may require the completion of clinical trials that compare the cost effectiveness of a particular therapeutic candidate to currently available therapies. A Member State may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our therapeutic candidates. Historically, products launched in the European Union do not follow price structures of the U.S. and generally prices tend to be significantly lower.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could harm our business.

We are subject to numerous foreign, federal, state and local environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources, including any available insurance.

In addition, our leasing and operation of real property may subject us to liability pursuant to certain of these laws or regulations. Under existing U.S. environmental laws and regulations, current or previous owners or operators of real property and entities that disposed or arranged for the disposal of hazardous substances may be held strictly, jointly and severally liable for the cost of investigating or remediating contamination caused by hazardous substance releases, even if they did not know of and were not responsible for the releases.

We could incur significant costs and liabilities which may adversely affect our financial condition and operating results for failure to comply with such laws and regulations, including, among other things, civil or

criminal fines and penalties, property damage and personal injury claims, costs associated with upgrades to our facilities or changes to our operating procedures, or injunctions limiting or altering our operations. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations, which are becoming increasingly more stringent, may impair our research, development or production efforts. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Legislation or other changes in U.S. tax law could adversely affect our business and financial condition.

The rules dealing with U.S. federal, state, and local income taxation are constantly under review by persons involved in the legislative process and by the Internal Revenue Service and the U.S. Treasury Department. Changes to tax laws (which changes may have retroactive application) could adversely affect us or holders of our common stock. In recent years, many changes have been made to applicable tax laws and changes are likely to continue to occur in the future. For example, the Tax Cuts and Jobs Act (the TCJA) was enacted in 2017 and made significant changes to corporate taxation, including the reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, the limitation of the tax deduction for net interest expense to 30% of adjusted taxable income (except for certain small businesses), the limitation of the deduction for net operating losses from taxable years beginning after December 31, 2017 to 80% of current year taxable income and the elimination of net operating loss carrybacks (though any such net operating losses may be carried forward indefinitely) and the modification or repeal of many business deductions and credits, in each case, as modified by the CARES Act (as defined below). In addition, on March 27, 2020, former President Trump signed into law the Coronavirus Aid, Relief, and Economic Security Act (the CARES Act), which included certain changes in tax law intended to stimulate the U.S. economy in light of the COVID-19 coronavirus outbreak, including temporary beneficial changes to the treatment of net operating losses, interest deductibility limitations and payroll tax matters. Under the CARES Act, the limitation of the tax deduction for net operating losses to 80% of taxable income applies only to taxable years beginning after December 31, 2020 and net operating losses generated in 2018, 2019 and 2020 by a calendar-year taxpayer may be carried back five taxable years. Further, under the CARES Act, the limitation of the tax deduction for net interest expense to 30% of adjusted taxable income is increased to 50% of adjusted taxable income for taxable years beginning in 2019 and 2020.

Additional changes to U.S. federal income tax law are currently being contemplated. Future changes in tax laws could have a material adverse effect on our business, cash flow, financial condition or results of operations. It cannot be predicted whether, when, in what form, or with what effective dates, new tax laws may be enacted, or regulations and rulings may be enacted, promulgated or issued under existing or new tax laws, which could result in an increase in our or our stockholders' tax liability or require changes in the manner in which we operate in order to minimize or mitigate any adverse effects of changes in tax law or in the interpretation thereof. We urge investors to consult with their legal and tax advisers regarding the implications of potential changes in tax laws on an investment in our common stock.

Our ability to use our U.S. net operating loss carryforwards and certain other U.S. tax attributes may be limited.

Our ability to use our U.S. federal and state net operating losses to offset potential future taxable income and related income taxes that would otherwise be due is dependent upon our generation of future taxable income, and we cannot predict with certainty when, or whether, we will generate sufficient taxable income to use all of our net operating losses.

Under the TCJA, as amended by the CARES Act, unused U.S. federal net operating losses generated for tax years beginning after December 31, 2017 are not subject to expiration and may be carried forward indefinitely. Such U.S. federal net operating losses generally may not be carried back to prior taxable years, except that, net operating losses generated in 2018, 2019 and 2020 may be carried back to each of the five tax years preceding the tax years of such losses. Additionally, for taxable years beginning after December 31, 2020, the deductibility of such U.S. federal net operating losses is limited to 80% of our taxable income in any future taxable year. In addition, both our current and our future unused U.S. federal net operating losses and tax credits may be subject to limitations under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended (the Code), if we undergo an “ownership change,” generally defined as a greater than 50 percentage point change (by value) in a corporation’s equity ownership by certain stockholders over a rolling three-year period. We may have experienced such ownership changes in the past, and we may experience ownership changes in the future as a result of this offering or subsequent shifts in our stock ownership, some of which are outside our control. Our net operating losses and tax credits may also be impaired or restricted under state law. As of December 31, 2020, we had U.S. federal and state net operating loss carryforwards of approximately \$5.3 million and \$5.2 million, respectively, and our ability to utilize those net operating loss carryforwards could be limited by an “ownership change” as described above, which could result in increased tax liability to us.

Risks Related to Employee Matters and Managing our Growth

Our future success depends on our ability to retain key employees and to attract, retain and motivate qualified personnel.

We are highly dependent on the expertise of our executive officers. Although we have entered into employment agreements and/or offer letters with our executive officers, each of them may terminate their employment with us at any time. Our industry has experienced a high rate of turnover in recent years. Our ability to compete in the highly competitive pharmaceuticals industry depends upon our ability to attract, retain and motivate highly skilled and experienced personnel with scientific, clinical, regulatory, manufacturing and management skills and experience. We conduct our operations in the Cambridge, MA area, a region that is home to many other pharmaceutical companies as well as many academic and research institutions, resulting in fierce competition for qualified personnel. We may not be able to attract or retain qualified personnel in the future due to the intense competition for a limited number of qualified personnel among pharmaceutical companies. Many of the other pharmaceutical companies against which we compete have greater financial and other resources, different risk profiles and a longer history in the industry than we do. Our competitors may provide higher compensation, more diverse opportunities and/or better opportunities for career advancement. Any or all of these competing factors may limit our ability to continue to attract and retain high quality personnel, which could negatively affect our ability to successfully develop and commercialize our therapeutic candidates and to grow our business and operations as currently contemplated.

To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided stock options that vest over time. The value to employees of stock options that vest over time may be significantly affected by movements in our stock price that are beyond our control and may at any time be insufficient to counteract more lucrative offers from other companies. Despite our efforts to retain valuable employees, members of our management, scientific and development teams may terminate their employment with us on short notice. For example, employment of our key employees is at-will, which means that any of our employees could leave our employment at any time, with or without notice.

In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us.

We expect to expand our development and regulatory capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

As of November 30, 2021, we had 34 full-time employees. We expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of clinical development, clinical operations, manufacturing, regulatory affairs and, if any of our therapeutic candidates receives marketing approval, sales, marketing and distribution. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth and potentially with developing sales, marketing and distribution infrastructure, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The expansion of our operations may lead to significant costs and may divert our management and business development resources.

If we are not able to effectively manage growth and expand our organization, we may not be able to successfully implement the tasks necessary to further develop and commercialize VGL101, our other pipeline therapeutic candidates or any future therapeutic candidates and, accordingly, may not achieve our research, development and commercialization goals.

Our employees and independent contractors, including principal investigators, CROs, consultants and vendors, may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk that our employees and independent contractors, including principal investigators, CROs, consultants and vendors may engage in misconduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or disclosure of unauthorized activities to us that violate: (i) the laws and regulations of the FDA and other similar regulatory requirements, including those laws that require the reporting of true, complete and accurate information to such authorities, (ii) manufacturing standards, including cGMP requirements, (iii) federal and state data privacy, security, fraud and abuse and other healthcare laws and regulations in the U.S. and abroad or (iv) laws that require the true, complete and accurate reporting of financial information or data. Activities subject to these laws also involve the improper use or misrepresentation of information obtained in the course of clinical trials, the creation of fraudulent data in our preclinical studies or clinical trials or illegal misappropriation of drug product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. In addition, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and financial results, including, without limitation, the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgements, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, imprisonment, contractual damages, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

We face significant competition, and if our competitors develop technologies or therapeutic candidates more rapidly than we do or their technologies are more effective, our business and our ability to develop and successfully commercialize products may be adversely affected.

The biotechnology and pharmaceutical industry is characterized by rapidly changing technologies, significant competition and a strong emphasis on intellectual property. These characteristics also apply to the

[Table of Contents](#)

development and commercialization of treatments in neurodegenerative diseases, including AD. While we believe that our focus, expertise, scientific knowledge and intellectual property provide us with competitive advantages, we face competition from several different sources, including large and small biopharmaceutical companies, academic research institutions, government agencies and public and private research organizations, that conduct research, seek patent protection, and establish collaborative arrangements for research, development, manufacturing and commercialization.

No products have been approved to treat ALSP, and we are not aware of any in clinical development other than VGL101. Academics have investigated the use of hematopoietic stem cell transplantation in a small number of ALSP patients, however, we believe this modality has limited benefits and several key limitations.

We are aware of one company, bluebirdbio, Inc., which received marketing approval for SKYSONA™ (elivaldogene autotemcel) in July 2021 in the European Union for a cALD treatment. In October 2021, the company announced it will withdraw its regulatory marketing authorization for SKYSONA™ from the European Union. In the U.S., development of elivaldogene autotemcel was put on clinical hold in August 2021 following a report that one treated patient developed myelodysplastic syndrome (MDS), a type of blood cancer. Two additional cases of MDS have been subsequently reported. In December 2021, bluebirdbio announced that the FDA has accepted its BLA for elivaldogene autotemcel for cALD. As of December 2021, a second company, Minoryx Therapeutics, Inc. is developing a small molecule therapeutic for the treatment of cALD in a Phase 2/3 trial.

Currently, there are two other companies that are in the early stages of developing TREM2 agonists for the treatment of AD. We consider our direct competitors to be Alektor, Inc. and its corporate partner, AbbVie Inc., Denali Therapeutics, Inc. and its corporate partner, Takeda Pharmaceutical Company, Cognyx Pharmaceuticals, Inc. and Muna Therapeutics, Inc.

There are several existing treatments marketed today for the treatment of AD, which primarily provide symptomatic relief. Notably, Biogen Inc., recently received FDA accelerated approval for a product based on reduction of amyloid beta plaques, a biomarker that may predict a reduction in clinical decline; continued approval may require demonstration of disease-modifying benefits. Other pharmaceutical and biotechnology companies are pursuing disease-modifying treatments for AD and other common neurodegenerative disorders by seeking to modulate a range of targets. Companies pursuing microglia-targeted therapeutics include Janssen Pharmaceuticals, Inc., Alektor Inc., Denali Therapeutics, Inc., Elixiron Therapeutics, Inc., Muna Therapeutics, Inc., Cognyx Pharmaceuticals, Inc., and CAMP4 Therapeutics Corporation, Inc.

Many of our competitors have significant financial, technical, manufacturing, marketing, sales and supply resources or experience. These competitors also compete with us in recruiting qualified scientific and management personnel as well as establishing clinical trial sites and patient registration for clinical trials, and in acquiring new technologies. If we successfully obtain approval for any therapeutic candidate, we will face competition based on many different factors, including the safety and effectiveness of our therapeutics, the ease with which our therapeutics can be administered, the timing and scope of regulatory approvals for these products, the availability and cost of manufacturing, marketing and sales capabilities, price, reimbursement coverage and patent position. Competing products could present superior treatment alternatives, including by being more effective, safer, more convenient, less expensive or marketed and sold more effectively than any products we may develop. Competitive products or technological approaches may make any products we develop obsolete or noncompetitive before we recover the expense of developing and commercializing our therapeutic candidates. If we are unable to compete effectively, our opportunity to generate revenue from the sale of the therapeutics we may develop could be adversely affected.

We will incur increased costs as a result of operating as a public company, and our management will devote substantial time to related compliance initiatives.

As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company, and these expenses may increase even more after we are no longer an “emerging growth

company.” We will be subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (Exchange Act), the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Protection Act, as well as rules adopted, and to be adopted, by the SEC and Nasdaq. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, we expect these rules and regulations to substantially increase our legal and financial compliance costs and to make some activities more time-consuming and costly, which will increase our operating expenses. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain sufficient coverage, particularly in light of recent cost increases related to coverage. We cannot accurately predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers.

In addition, as a public company we will be required to incur additional costs and obligations in order to comply with SEC rules that implement Section 404 of the Sarbanes-Oxley Act. Under these rules, beginning with our second annual report on Form 10-K after we become a public company, we will be required to make a formal assessment of the effectiveness of our internal control over financial reporting, and once we cease to be an emerging growth company, we may be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with Section 404 within the prescribed period, we will be engaging in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of our internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are designed and operating effectively, and implement a continuous reporting and improvement process for internal control over financial reporting.

Risks Related to This Offering and Ownership of Our Common Stock

We do not know whether an active, liquid and orderly trading market will develop for our common stock or what the market price of our common stock will be and as a result it may be difficult for investors to sell their shares of our common stock.

Prior to this offering, no market for shares of our common stock existed and an active trading market for our shares may never develop or be sustained following this offering. We will determine the initial public offering price for our common stock through negotiations with the underwriters, and the negotiated price may not be indicative of the market price of our common stock after this offering. The market value of our common stock may decrease from the initial public offering price. As a result of these and other factors, investors may be unable to resell their shares of our common stock at or above the initial public offering price. The lack of an active market may impair investors’ ability to sell their shares at the time they wish to sell them or at a price that they consider reasonable. The lack of an active market may also reduce the fair market value of investors’ shares. Furthermore, an inactive market may also impair our ability to raise capital by selling shares of our common stock and may impair our ability to enter into strategic collaborations or acquire companies, technologies or other assets by using our shares of common stock as consideration.

The market price of our common stock may be volatile, and investors could lose all or part of their investment.

The trading price of our common stock following this offering is likely to be highly volatile and subject to wide fluctuations in response to various factors, some of which we cannot control. The stock market in general, and pharmaceutical and biotechnology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies.

[Table of Contents](#)

Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. In addition to the factors discussed in this “Risk Factors” section and elsewhere in this prospectus, these factors include:

- the timing and results of INDs, preclinical studies and clinical trials of our therapeutic candidates or those of our competitors;
- the success of competitive products or announcements by potential competitors of their product development efforts;
- our decision to initiate a clinical trial, not to initiate a clinical trial or to terminate an existing clinical trial;
- any delay in our regulatory filings for our therapeutic candidates and any adverse development or perceived adverse development with respect to the applicable regulatory authority’s review of such filings;
- adverse developments concerning our potential future in-house manufacturing facilities or CMOs;
- regulatory actions with respect to our therapeutics or therapeutic candidates or our competitors’ products or therapeutic candidates;
- actual or anticipated changes in our growth rate relative to our competitors;
- the size and growth of our initial target markets;
- unanticipated serious safety concerns related to the use of our therapeutic candidates;
- regulatory or legal developments in the U.S. and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- significant lawsuits, including patent or stockholder litigation;
- publication of research reports about us or our industry, or positive or negative recommendations or withdrawal of research coverage by securities analysts;
- the recruitment or departure of key personnel;
- announcements by us or our competitors of significant acquisitions, strategic collaborations, joint ventures, collaborations or capital commitments;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- market conditions in the pharmaceutical and biotechnology sector;
- changes in the structure of healthcare payment systems;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- our failure to meet the estimates and projections of the investment community or that we may otherwise provide to the public;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;
- expiration of market stand-off or lock-up agreements;
- the impact of any natural disasters or public health emergencies, such as the COVID-19 pandemic;
- general economic, political, industry and market conditions; and
- other events or factors, many of which are beyond our control.

[Table of Contents](#)

The realization of any of the above risks or any of a broad range of other risks, including those described in this “Risk Factors” section, could have a dramatic and adverse impact on the market price of our common stock. If the market price of our common stock after this offering does not exceed the public offering price, you may not realize any return on your investment in us and may lose some or all of your investment.

If securities or industry analysts do not publish research or reports, or if they publish adverse or misleading research or reports, regarding us, our business or our market, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that securities or industry analysts publish about us, our business or our market. We do not currently have and may never obtain research coverage by securities or industry analysts. If no or few securities or industry analysts commence coverage of us, our stock price would be negatively impacted. In the event we obtain securities or industry analyst coverage, if any of the analysts who cover us issue adverse or misleading research or reports regarding us, our business model, our intellectual property, our stock performance or our market, or if our operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.

As widely reported, global credit and financial markets have experienced extreme volatility and disruptions in the past several years, most recently due to the COVID-19 pandemic, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability. There can be no assurance that further deterioration in credit and financial markets and confidence in economic conditions, whether due to the evolving effects of the COVID-19 pandemic or otherwise, will not occur. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or continued unpredictable and unstable market conditions. If the current equity and credit markets deteriorate, or do not improve, it may make any necessary debt or equity financing more difficult, more costly, and more dilutive.

Failure to secure necessary financing in a timely manner and on favorable terms could have a material adverse event on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans. In addition, there is a risk that one or more of our current service providers, manufacturers and other partners may not survive these difficult economic times, which could directly affect our ability to attain our operating goals on schedule and on budget. After the completion of this offering, our stock price may decline due in part to the volatility of the stock market and the general economic downturn.

Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.

Prior to this offering, our executive officers, directors, holders of 5% or more of our capital stock and their respective affiliates beneficially owned approximately 81% of our outstanding voting stock and, upon the closing of this offering, that same group will beneficially own approximately 61% of our outstanding voting stock (based on the number of shares of common stock outstanding as of September 30, 2021, assuming no exercise of the underwriters’ option to purchase additional shares, no exercise of outstanding options and no purchases of shares in this offering by any of this group), in each case assuming the conversion of all outstanding shares of our Series A and Series B preferred stock into 19,536,870 shares of our common stock immediately prior to the closing of this offering.

These stockholders, acting together, may be able to impact matters requiring stockholder approval. For example, they may be able to impact elections of directors, amendments of our organizational documents or

approval of any merger, sale of assets or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock that investors may feel are in their best interest as one of our stockholders. The interests of this group of stockholders may not always coincide with each investor's interests or the interests of other stockholders and they may act in a manner that advances their best interests and not necessarily those of other stockholders, including seeking a premium value for their common stock, and might affect the prevailing market price for our common stock.

Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. After this offering, and without giving effect to any purchases that may be made through our directed share program, we will have outstanding 28,263,963 shares of common stock, based on the number of shares outstanding as of September 30, 2021, assuming: (i) no exercise of the underwriters' option to purchase additional shares and (ii) the conversion of all outstanding shares of our Series A and Series B preferred stock into 19,536,870 shares of common stock immediately prior to the completion of this offering. This includes the shares that we sell in this offering, which may be resold in the public market immediately without restriction, unless purchased by our affiliates. Of the remaining shares, 21,263,963 shares of our common stock are currently restricted as a result of securities laws or market stand-off or lock-up agreements but will be able to be sold after this offering as described in the section titled "Shares Eligible for Future Sale." Moreover, after this offering, holders of an aggregate of shares of our common stock will have rights, subject to certain conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We also intend to register all shares of common stock that we may issue under our equity incentive plans. Once we register these shares, they can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates and the lock-up agreements described in the section titled "Underwriting."

Our executive officers, directors and the holders of substantially all of our capital stock and securities convertible into or exchangeable for our capital stock have entered into market stand-off agreements with us and lock-up agreements with the underwriters under which they have agreed, subject to specific exceptions described in the section titled "Underwriting," not to, among other things, sell, directly or indirectly, any shares of common stock without the permission of Morgan Stanley and Jefferies for a period of 180 days following the date of this prospectus. We refer to such period as the lock-up period. When the lock-up period expires, we and our securityholders subject to a lock-up agreement or market stand-off agreement will be able to sell our shares in the public market. In addition, Morgan Stanley and Jefferies may, in their sole discretion, release all or some portion of the shares subject to lock-up agreements at any time and for any reason. See the description of the market stand-off agreement with us and the lock-up agreement with the underwriters in the section titled "Shares Eligible for Future Sale" for more information. Sales of a substantial number of such shares upon expiration of the lock-up and market stand-off agreements, the perception that such sales may occur, or early release of these agreements, could cause our market price to fall or make it more difficult for investors to sell their common stock at a time and price that they deem appropriate.

Investors will incur immediate and substantial dilution as a result of this offering.

As of September 30, 2021, investors that purchase common stock in this offering will incur immediate and substantial dilution of approximately \$8.72 per share, representing the difference between the assumed initial public offering price of \$16.00 per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, and our pro forma as adjusted net tangible book value per share after giving effect to this offering and the automatic conversion of all outstanding shares of our Series A and Series B preferred stock immediately prior to the closing of this offering. As of September 30, 2021, there were 2,921,370 shares subject to

outstanding options with a weighted-average exercise price of \$3.83 per share. After September 30, 2021, an additional 355,396 shares are subject to outstanding options with a weighted-average exercise price of \$9.62. To the extent that these outstanding options are ultimately exercised or the underwriters exercise their option to purchase additional shares, investors will incur further dilution. See the section titled “Dilution” for a further description of the dilution investors will experience immediately after this offering.

Future sales and issuances of our common stock or rights to purchase common stock, including pursuant to our 2021 Plan, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.

We expect that significant additional capital may be needed in the future to continue our planned operations, including conducting clinical trials, commercialization efforts, expanded research and development activities and costs associated with operating a public company. To raise capital, we may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time. If we sell common stock, convertible securities or other equity securities, investors may be materially diluted by subsequent sales. Such sales may also result in material dilution to our existing stockholders, and new investors could gain rights, preferences and privileges senior to the holders of our common stock. Pursuant to our 2021 Stock Option and Grant Plan (2021 Plan), our management is authorized to grant stock options to our employees, directors and consultants. If the number of shares reserved under our 2021 Plan is increased pursuant to the terms of the 2021 Plan, our stockholders may experience additional dilution, which could cause our stock price to fall. Any of the above events could significantly harm our business, prospects, financial condition and results of operations and cause the price of our common stock to decline.

The administrator of the 2021 Plan is authorized to exercise its discretion to effect the repricing of stock options and stock appreciation rights and there may be adverse consequences to our business if the administrator of the 2021 Plan exercises such discretion.

Pursuant to our 2021 Plan, we are authorized to grant equity awards, including stock options and stock appreciation rights, to our employees, directors and consultants. The administrator of the 2021 Plan (which we expect will be, as is customary, our compensation committee) is authorized to exercise its discretion to reduce the exercise price of stock options or stock appreciation rights or effect the repricing of such awards. Although we do not anticipate needing to exercise this discretion in the near term, or at all, if the administrator of the 2021 Plan were to exercise such discretion without seeking prior stockholder approval, certain proxy advisory firms or institutional investors may be unsupportive of such actions and publicly criticize our compensation practices, and proxy advisory firms may recommend an “against” or “withhold” vote for members of our compensation committee. In addition, if we are required to hold an advisory vote on named executive officer compensation (known as the “say-on-pay” vote) at the time of, or subsequent to, any such repricing, it is likely that proxy advisory firms would issue an “against” recommendation on our say on pay vote and institutional investors may not be supportive of our say-on-pay vote. If proxy advisory firms or institutional investors are successful in aligning their views with our broader stockholder base and we are required to make changes to the composition of our board and its committees, or if we need to make material changes to our compensation and corporate governance practices, our business might be disrupted and our stock price might be negatively impacted. Even if we are able to successfully rationalize the exercise of such discretionary power, defending against any “against” or “withhold” recommendation for members of our compensation committee, any “against” recommendation on our say on pay vote or public criticism could be distracting to management, and responding to such positions from such firms or investors, even if remedied, can be costly and time-consuming.

In addition, if the administrator of the 2021 Plan does determine to reprice stock options or stock appreciation rights, even absent negative reactions from proxy advisory firms and institutional investors, management attention may be diverted and we could incur significant costs, including accounting and administrative costs and attorneys’ fees. We may also be required to recognize incremental compensation expense as such result of a repricing. These actions could cause our stock price to decrease and experience periods of increased volatility, which could result in material adverse consequences to our business.

Raising additional capital may cause dilution to our stockholders, including purchasers of common stock in this offering, restrict our operations or require us to relinquish rights to our technologies or therapeutic candidates.

We do not have any committed external source of funds or other support for our development and commercialization efforts, and we cannot be certain that additional funding will be available on acceptable terms, or at all. Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through equity offerings, debt financings, or other capital sources, including potential collaborations, licenses and other similar arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a common stockholder. Any future debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, selling or licensing our assets, making capital expenditures, declaring dividends or encumbering our assets to secure future indebtedness. Such restrictions could adversely impact our ability to conduct our operations and execute our business plan.

As a result of our recurring losses from operations and recurring negative cash flows from operations, there is uncertainty regarding our ability to maintain liquidity sufficient to operate our business effectively. If we raise additional funds through future collaborations, licenses and other similar arrangements, we may have to relinquish valuable rights to our future revenue streams, research programs or therapeutic candidates, or grant licenses on terms that may not be favorable to us and/or that may reduce the value of our common stock. If we are unable to raise additional funds through equity or debt financings or other arrangements when needed or on terms acceptable to us, we would be required to delay, limit, reduce, or terminate our product development or future commercialization efforts or grant rights to develop and market therapeutic candidates that we would otherwise prefer to develop and market ourselves. Any of the above events could significantly harm our business, prospects, financial condition and results of operations and cause the price of our common stock to decline.

We are an “emerging growth company” and a smaller reporting company, and we cannot be certain if the reduced reporting requirements applicable to emerging growth companies and smaller reporting companies will make our common stock less attractive to investors.

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012 (JOBS Act). For as long as we continue to be an emerging growth company, we intend to take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including:

- being permitted to provide only two years of audited financial statements, in addition to any required unaudited interim financial statements, with correspondingly reduced “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure in this prospectus;
- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (Sarbanes-Oxley Act);
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements;
- reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements; and
- exemptions from the requirements of holding nonbinding advisory stockholder votes on executive compensation and stockholder approval of any golden parachute payments not previously approved.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to avail ourselves of

[Table of Contents](#)

this exemption from new or revised accounting standards and, therefore, will not be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies. As a result, our financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates.

We will remain an emerging growth company until the earliest to occur of: (i) the last day of the fiscal year in which we have more than \$1.07 billion in annual revenue; (ii) the date we qualify as a “large accelerated filer,” with at least \$700.0 million of equity securities held by non-affiliates; (iii) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period; and (iv) the last day of the fiscal year ending after the fifth anniversary of our initial public offering.

Even after we no longer qualify as an emerging growth company, we may still qualify as a “smaller reporting company,” which would allow us to continue to take advantage of many of the same exemptions from disclosure requirements, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions.

We will have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering, and investors will be relying on the judgment of our management regarding the application of these proceeds. Investors will not have the opportunity, as part of their investment decision, to assess whether we are using the proceeds appropriately. Our management might not apply the net proceeds in ways that ultimately increase the value of investors’ investment. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

We do not intend to pay dividends on our common stock so any returns will be limited to the value of our stock.

We have never declared or paid any cash dividends on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to stockholders will therefore be limited to any appreciation in the value of their stock.

Anti-takeover provisions in our certificate of incorporation and bylaws, as they will be in effect upon closing of this offering, and Delaware law might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the market price of our common stock.

Our third amended and restated certificate of incorporation and amended and restated bylaws, as they will be in effect upon closing of this offering, will contain provisions that could depress the market price of our common stock by acting to discourage, delay or prevent a change in control of our company or changes in our management that the stockholders of our company may deem advantageous. These provisions, among other things:

- a board of directors divided into three classes serving staggered three-year terms, such that not all members of the board will be elected at one time;

[Table of Contents](#)

- a prohibition on stockholder actions through written consent, which requires that all stockholder actions be taken at a meeting of our stockholders;
- a requirement that special meetings of stockholders be called only by the board of directors acting pursuant to a resolution approved by the affirmative vote of a majority of the directors then in office;
- advance notice requirements for stockholder proposals and nominations for election to our board of directors;
- a requirement that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of not less than two-thirds of all outstanding shares of our voting stock then entitled to vote in the election of directors;
- a requirement of approval of not less than two-thirds of all outstanding shares of our voting stock to amend any bylaws by stockholder action or to amend specific provisions of our certificate of incorporation; and
- the authority of the board of directors to issue preferred stock on terms determined by the board of directors without stockholder approval and which preferred stock may include rights superior to the rights of the holders of common stock.

In addition, Section 203 of the General Corporation Law of the State of Delaware (DGCL) prohibits a publicly-held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person which together with its affiliates owns, or within the last three years has owned, 15% of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner.

Any provision of our fourth amended and restated certificate of incorporation, amended and restated bylaws or Delaware law that has the effect of delaying or preventing a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our capital stock and could also affect the price that some investors are willing to pay for our common stock.

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

Upon the closing of this offering, we will become subject to the periodic reporting requirements of the Exchange Act. We designed our disclosure controls and procedures to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management, and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

These inherent limitations include the facts that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

Our bylaws that will become effective upon the effectiveness of this registration statement designate certain courts as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our bylaws that will become effective upon the completion of this offering provide that, unless we consent in writing to an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for any state law claims for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of, or a claim based on, fiduciary duty owed by any of our current or former directors, officers, and employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our bylaws (including the interpretation, validity or enforceability thereof), or (iv) any action asserting a claim that is governed by the internal affairs doctrine, in each case subject to the Court of Chancery having personal jurisdiction over the indispensable parties named as defendants therein (Delaware Forum Provision). The Delaware Forum Provision will not apply to any causes of action arising under the Securities Act or the Exchange Act. Our amended and restated bylaws further provide that, unless we consent in writing to the selection of an alternative forum, the United States District Court for the District of Massachusetts shall be the sole and exclusive forum for resolving any complaint asserting a cause or causes of action arising under the Securities Act (Federal Forum Provision). In addition, our amended and restated bylaws provide that any person or entity purchasing or otherwise acquiring any interest in shares of our common stock is deemed to have notice of and consented to the foregoing provisions; provided, however, that stockholders cannot and will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder.

The Delaware Forum Provision and the Federal Forum Provision in our amended and restated bylaws may impose additional litigation costs on stockholders in pursuing any such claims. Additionally, the forum selection clauses in our amended and restated bylaws may limit our stockholders' ability to bring a claim in a forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage such lawsuits against us and our directors, officers and employees even though an action, if successful, might benefit our stockholders. In addition, while the Delaware Supreme Court ruled in March 2020 that federal forum selection provisions purporting to require claims under the Securities Act be brought in federal court were "facially valid" under Delaware law, there is uncertainty as to whether other courts will enforce our Federal Forum Provision. If the Federal Forum Provision is found to be unenforceable, we may incur additional costs associated with resolving such matters. The Federal Forum Provision may also impose additional litigation costs on stockholders who assert that the provision is not enforceable or invalid. The Court of Chancery of the State of Delaware and the federal district courts of the U.S. may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments may be more or less favorable to us than our stockholders.

We may be subject to securities litigation, which is expensive and could divert management attention.

The market price of our common stock may be volatile and, in the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the sections entitled “Prospectus Summary,” “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Business,” contains express or implied forward-looking statements that are based on our management’s belief and assumptions and on information currently available to our management. These statements relate to future events or our future operational or financial performance, and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Forward-looking statements in this prospectus include, but are not limited to, statements about:

- the initiation timing, progress, results and cost of VGL101 and our small molecule TREM2 agonists program, as well as our research and development programs and our current and future preclinical and clinical studies, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available and our current and future programs;
- the application of our precision medicine approach to develop microglia-targeted therapies for patients with rare, genetically defined neurodegenerative diseases and subsequently advance into neurodegenerative diseases affecting larger patient populations;
- the expansion of our modality agnostic product pipeline to other microglial targets beyond TREM2;
- the ability of our preclinical studies and clinical trials to demonstrate safety and efficacy of our product candidates, as well as the beneficial characteristics, therapeutic effects and other positive results;
- our estimates of the number of patients that we will enroll and our ability to initiate, recruit and enroll patients in and conduct and successfully complete our clinical trials at the pace that we project;
- the ability to identify research and efficiently discover and develop product candidates;
- the timing, scope and likelihood of regulatory filings and approvals, including timing of INDs and final FDA approval of our current product candidates or any future product candidates;
- the timing, scope or likelihood of foreign regulatory filings and approvals;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates and other product candidates we may develop, including the extensions of existing patent terms where available, the validity of intellectual property rights held by third parties, and our ability not to infringe, misappropriate or otherwise violate any third-party intellectual property rights;
- our ability to scale-up our manufacturing and processing approaches to appropriately address our anticipated commercial needs, which will require significant resources;
- the ability and willingness of our third-party strategic collaborators to continue research and development activities relating to our development candidates and product candidates;
- our ability to obtain funding for our operations necessary to complete further development and commercialization of our product candidates;
- our ability to commercialize our products, if approved;
- the pricing and reimbursement of our product candidates, if approved;
- the implementation of our business model, and strategic plans for our business, product candidates, and technology;
- estimates of our future expenses, revenues and capital requirements and our needs for additional financing;

[Table of Contents](#)

- future agreements with third parties in connection with the development and commercialization of product candidates and any other approved product;
- the size and growth potential of the markets for our product candidates and our ability to serve those markets;
- our financial performance;
- the rate and degree of market acceptance of our product candidates;
- regulatory developments in the United States and foreign countries;
- our ability to attract and retain key scientific or management personnel;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;
- our ability to produce our products or product candidates with advantages in turnaround times or manufacturing cost;
- the success of competing therapies that are or may become available;
- the impact of laws and regulations;
- our use of the proceeds from this offering;
- developments relating to our competitors and our industry;
- the effect of the COVID-19 pandemic, including mitigation efforts and economic effects, on any of the foregoing or other aspects of our business operations, including but not limited to a negative impact on enrollment in our ongoing clinical trial as well as any other impacts on our existing and future clinical trials or our preclinical studies; and
- other risks and uncertainties, including those listed under the caption “Risk Factors.”

In some cases, forward-looking statements can be identified by terminology such as “may,” “should,” “expects,” “intends,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “potential,” “continue,” or the negative of these terms or other comparable terminology. These statements are only predictions. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties and other factors, which are, in some cases, beyond our control and which could materially affect results. Factors that may cause actual results to differ materially from those implied or projected by forward-looking statements include, among other things, those listed under the section entitled “Risk Factors” and elsewhere in this prospectus. If one or more of these risks or uncertainties occur, or if our underlying assumptions prove to be incorrect, actual events or results may vary significantly from those implied or projected by the forward-looking statements. No forward-looking statement is a guarantee of future performance. You should read this prospectus and the documents that we reference in this prospectus and have filed with the SEC as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from any future results expressed or implied by these forward-looking statements.

While we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should therefore not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this prospectus.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to

[Table of Contents](#)

be reliable, although they do not guarantee the accuracy or completeness of such information. We are responsible for all of the disclosure contained in this prospectus, and we believe that these sources are reliable; however, we have not independently verified the information contained in such publications.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and you are cautioned not to unduly rely upon these statements.

USE OF PROCEEDS

We estimate that our net proceeds from the sale of shares of our common stock in this offering will be approximately \$101.1 million, or \$116.7 million if the underwriters exercise in full their option to purchase additional shares, assuming an initial public offering price of \$16.00 per share, the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Each \$1.00 increase (decrease) in the assumed initial public offering price of \$16.00 per share, the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) our net proceeds from this offering by \$6.5 million, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each 1,000,000 share increase (decrease) in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) our net proceeds from this offering by \$14.9 million, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The principal purposes of this offering are to create a public market for our common stock and thereby facilitate future access to the public equity markets, increase our visibility in the marketplace and obtain additional capital. We currently intend to use the net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, for the following:

- approximately \$105 million to advance the development of VGL101 for the treatment of ALSP and other rare leukoencephalopathies and leukodystrophies, including the initiation of clinical trials, clinical research outsourcing and drug manufacturing;
- approximately \$30 million for the continued research of our novel, small molecule program focusing on treatments for common neurodegenerative diseases that are linked to microglial dysfunction with genetically defined AD as the initial indication;
- approximately \$20 million for the continued research and development of our development programs, including the expansion of our modality agnostic product pipeline to include other microglial targets; and
- the remainder for working capital and other general corporate purposes.

Based on our current plans, we believe that our existing cash and cash equivalents, together with the net proceeds from this offering, will be sufficient to enable us to fund our operating expenses and capital expenditure requirements into the fourth quarter of 2023. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. We do not have any committed external source of funds.

Our expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering or the amounts that we will actually spend on the uses set forth above and we expect that we will require additional funds in order to fully accomplish the specified uses of the proceeds of this offering. We may also use a portion of the net proceeds to in-license, acquire, or invest in complementary businesses or technologies to continue to build our pipeline, research and development capabilities and our intellectual property position, although we currently have no agreements, commitments, or understandings with respect to any such transaction.

Due to the many inherent uncertainties in the development of our product candidates, the amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our research and development, the timing of patient enrollment and evolving regulatory requirements, the

[Table of Contents](#)

timing and success of preclinical studies, our ongoing clinical studies or clinical studies we may commence in the future, the timing of regulatory submissions, any strategic alliances that we may enter into with third parties for our product candidates or strategic opportunities that become available to us, and any unforeseen cash needs.

Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation instruments, including short-term and long-term interest-bearing instruments, investment-grade securities, and direct or guaranteed obligations of the U.S. government. We cannot predict whether the proceeds invested will yield a favorable return. Our management will retain broad discretion in the application of the net proceeds we receive from our initial public offering, and investors will be relying on the judgment of our management regarding the application of the net proceeds.

DIVIDEND POLICY

We currently intend to retain all available funds and any future earnings to fund the growth and development of our business. We do not intend to pay cash dividends to our stockholders in the foreseeable future. Any future determination to declare dividends will be made at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and our capitalization as of September 30, 2021:

- on an actual basis;
- on a pro forma basis to give effect to (i) the automatic conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of common stock immediately prior to the completion of this offering and (ii) the filing and effectiveness of our third amended and restated certificate of incorporation immediately prior to the completion of this offering, in each case as if such events had occurred on September 30, 2021; and
- on a pro forma as adjusted basis to give further effect to the issuance and sale of 7,000,000 shares of common stock in this offering at an assumed initial public offering price of \$16.00 per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma as adjusted information below is illustrative only, and our capitalization following the completion of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing. You should read the information in this table together with our consolidated financial statements and the related notes included elsewhere in this prospectus and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” section of this prospectus.

	As of September 30, 2021		
	Actual	Pro forma	Pro forma as adjusted(1)
	(in thousands, except share and per share amounts)		
Cash and cash equivalents	\$ 110,656	\$ 110,656	\$ 211,716
Series A convertible preferred stock, \$0.0001 par value; 28,522,592 shares authorized; 28,522,592 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	\$ 72,327	\$ —	\$ —
Series B convertible preferred stock, \$0.0001 par value; 25,657,096 shares authorized; 25,657,096 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	89,653	—	—
Stockholders’ equity (deficit):			
Preferred stock, \$0.0001 par value; no shares authorized, issued or outstanding, actual; 10,000,000 shares authorized and no shares issued or outstanding, pro forma and pro forma as adjusted			
Common stock, \$0.0001 par value; 40,000,000 shares authorized, 1,727,093 shares issued and outstanding, actual; 40,000,000 shares authorized, 21,263,963 shares issued and outstanding, pro forma; 150,000,000 shares authorized, 28,263,963 shares issued and outstanding, pro forma as adjusted	—	2	3
Additional paid-in capital	1,586	163,564	264,623
Accumulated deficit	(58,844)	(58,844)	(58,844)
Total stockholders’ equity (deficit)	(57,258)	104,722	205,782
Total capitalization	\$104,722	\$104,722	\$ 205,782

- (1) Each \$1.00 increase (decrease) in the assumed initial public offering price of \$16.00 per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash and cash equivalents, total stockholders’ equity and total

[Table of Contents](#)

capitalization by \$6.5 million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash and cash equivalents, total stockholders' equity and total capitalization by \$14.9 million, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The number of shares of our common stock in the table above is based on 21,263,963 shares of our common stock (which includes 284,717 shares of restricted common stock) outstanding as of September 30, 2021, after giving effect to the automatic conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of our common stock immediately prior to the completion of this offering, and excludes:

- 2,921,370 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2021 under our 2020 Equity Incentive Plan, or 2020 Plan, at a weighted average exercise price of \$3.83 per share;
- 355,396 shares of our common stock issuable upon the exercise of stock options granted after September 30, 2021 pursuant to our 2020 Plan at a weighted average exercise price of \$9.62 per share, including 167,307 stock options that were subsequently forfeited;
- 20,394 shares of common stock issued upon the exercise of stock options after September 30, 2021;
- 22,537 shares of restricted common stock repurchased by us after September 30, 2021;
- 464,350 shares of common stock reserved for future issuance as of September 30, 2021 under the 2020 Plan, which will cease to be available for issuance at the time that our 2021 Stock Option and Incentive Plan, or the 2021 Stock Plan, becomes effective;
- 286,127 shares of common stock reserved for future issuance under our 2021 Employee Stock Purchase Plan, or ESPP, which will become effective in connection with the completion of this offering; and
- 3,145,281 shares of our common stock that will become available for future issuance under our 2021 Plan, which will become effective in connection with the completion of this offering.

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the initial public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering.

Our historical net tangible book (deficit) as of September 30, 2021 was \$(58.2) million, or \$(33.68) per share of our common stock. Our historical net tangible book deficit per share is the amount of our total tangible assets less our total liabilities and the carrying values of our convertible preferred stock, which is not included within stockholders' deficit. Our historical net tangible book deficit per share represents historical net tangible book deficit divided by the 1,727,093 shares of our common stock outstanding as of September 30, 2021.

Our pro forma net tangible book value as of September 30, 2021 was \$103.8 million, or \$4.88 per share of our common stock. Pro forma net tangible book value represents the amount of our total tangible assets less our total liabilities, after giving effect to the automatic conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of common stock immediately prior to the completion of this offering. Pro forma net tangible book value per share represents pro forma net tangible book value divided by the total number of shares outstanding as of September 30, 2021, after giving effect to the pro forma adjustment described above.

After giving further effect to our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of \$16.00 per share, the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of September 30, 2021 would have been \$205.8 million, or \$7.28 per share. This amount represents an immediate increase in pro forma as adjusted net tangible book value per share of \$2.40 to our existing stockholders and immediate dilution of \$8.72 in pro forma as adjusted net tangible book value per share to new investors purchasing common stock in this offering.

Dilution per share to new investors is determined by subtracting pro forma as adjusted net tangible book value per share after this offering from the initial public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis (without giving effect to any exercise by the underwriters of their option to purchase additional shares):

Assumed initial public offering price per share	\$16.00
Historical net tangible book value (deficit) per share as of September 30, 2021	\$(33.68)
Increase per share attributable to the pro forma adjustment described above	\$ 38.56
Pro forma net tangible book value per share as of September 30, 2021	\$ 4.88
Increase in pro forma net tangible book value per share attributable to new investors participating in this offering	\$ 2.40
Pro forma as adjusted net tangible book value per share after this offering	\$ 7.28
Dilution per share to new investors purchasing common stock in this offering	\$ 8.72

The dilution information discussed above is illustrative only and will change based on the actual initial public offering price and other terms of this offering determined at pricing. Each \$1.00 increase (decrease) in the assumed initial public offering price of \$16.00 per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) our pro forma as adjusted net tangible book value per share after this offering by \$0.23 and dilution per share to new investors purchasing common stock in this offering by \$0.77, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and

[Table of Contents](#)

estimated offering expenses payable by us. Each increase of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase our pro forma as adjusted net tangible book value per share after this offering by \$0.26 and decrease dilution per share to new investors purchasing common stock in this offering by \$0.26, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each decrease of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would decrease our pro forma as adjusted net tangible book value per share after this offering by \$0.28 and increase dilution per share to new investors purchasing common stock in this offering by \$0.28, assuming no change in the assumed initial public offering price and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their option to purchase additional shares in full, our pro forma as adjusted net tangible book value per share after this offering would be \$8.45, representing an immediate increase in pro forma as adjusted net tangible book value per share of \$0.27 to existing stockholders and immediate dilution in pro forma as adjusted net tangible book value per share of \$0.27 to new investors purchasing common stock in this offering, based on the assumed initial public offering price of \$16.00 per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The following table summarizes on the pro forma as adjusted basis described above, the total number of shares of common stock purchased from us on an as converted to common stock basis, the total consideration paid or to be paid, and the average price per share paid or to be paid by existing stockholders and by new investors in this offering at an assumed initial public offering price of \$16.00 per share, which is the midpoint of the estimated price range set forth on the cover of this prospectus, before deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. As the table shows, new investors purchasing common stock in this offering will pay an average price per share substantially higher than our existing stockholders paid.

	<u>Shares Purchased</u>		<u>Total Consideration</u>		<u>Average Price Per Share</u>
	<u>Number</u>	<u>Percentage</u>	<u>Amount</u>	<u>Percentage</u>	
Existing stockholders	21,263,963	75.2%	\$163,566,000	59.4%	\$ 7.69
New investors	7,000,000	24.8	112,000,000	40.6%	\$ 16.00
Total	<u>28,263,963</u>	<u>100%</u>	<u>\$275,566,000</u>	<u>100%</u>	

The table above assumes no exercise of the underwriters' option to purchase additional shares in this offering. If the underwriters' option to purchase additional shares is exercised in full, the number of shares of our common stock held by existing stockholders would be reduced to 72.5% of the total number of shares of our common stock outstanding after this offering, and the number of shares of common stock held by new investors purchasing common stock in this offering would be increased to 27.5% of the total number of shares of our common stock outstanding after this offering.

The discussion and tables above are based on 21,263,963 shares of our common stock (which includes 284,717 shares of restricted common stock) outstanding as of September 30, 2021, after giving effect to the automatic conversion of all outstanding shares of our Series A and Series B convertible preferred stock in the aggregate into 19,536,870 shares of our common stock immediately prior to the completion of this offering, and excludes:

- 2,921,370 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2021 under our 2020 Equity Incentive Plan, or 2020 Plan, at a weighted average exercise price of \$3.83 per share;
- 355,396 shares of our common stock issuable upon the exercise of stock options granted after September 30, 2021 pursuant to our 2020 Plan at a weighted average exercise price of \$9.62 per share, including 167,307 stock options that were subsequently forfeited;

[Table of Contents](#)

- 20,394 shares of common stock issued upon the exercise of stock options after September 30, 2021;
- 22,537 shares of restricted common stock repurchased by us after September 30, 2021;
- 464,350 shares of common stock reserved for future issuance as of September 30, 2021 under the 2020 Plan, which will cease to be available for issuance at the time that our 2021 Stock Option and Incentive Plan, or the 2021 Stock Plan, becomes effective;
- 286,127 shares of common stock reserved for future issuance under our 2021 Employee Stock Purchase Plan, or ESPP, which will become effective in connection with the completion of this offering; and
- 3,145,281 shares of our common stock that will become available for future issuance under our 2021 Plan, which will become effective in connection with the completion of this offering.

To the extent that new stock options are issued or any outstanding options are exercised, or we issue additional shares of common stock in the future, there will be further dilution to new investors. In addition, we may choose to raise additional capital because of market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans. If we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations together with the "Selected Consolidated Financial Data" section of this prospectus and our consolidated financial statements and related notes included elsewhere in this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business and related financing includes forward-looking statements that involve risks and uncertainties. Many factors, including those factors set forth in the "Risk Factors" section of this prospectus, may materially and adversely affect our actual results, which may differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a microglia-focused company dedicated to improving the lives of patients, caregivers and families affected by rare and common neurodegenerative diseases by pursuing the development of disease-modifying therapeutics to restore the vigilance of microglia. Microglia are the sentinel immune cells of the brain and play a critical role in maintaining central nervous system, or CNS, health and responding to damage caused by disease. Leveraging recent research implicating microglial dysfunction in neurodegenerative diseases, we utilize a precision medicine approach to develop a pipeline of therapeutic candidates, initially for genetically defined patient subpopulations, that we believe will activate and restore microglial function.

Our lead candidate, VGL101, is a fully human monoclonal antibody, or mAb, that is designed to activate Triggering Receptor Expressed on Myeloid Cells 2, or TREM2. In November 2021, the FDA cleared our Investigational New Drug application, or IND, for VGL101 in ALSP at doses up to 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second half of 2022.

Since our inception, we have devoted substantially all of our efforts to organizing and staffing our company, research and development activities, business planning, raising capital, building our intellectual property portfolio and providing general and administrative support for these operations. To date, we have funded our operations primarily through proceeds from the sale of shares of our convertible preferred stock and a Simple Agreement for Future Equity, or SAFE. As of September 30, 2021, we had \$110.7 million of cash and cash equivalents. As of September 30, 2021, we raised aggregate gross proceeds of \$140.0 million from the sale of equity securities as follows:

- During each of the periods from June 22, 2020 (inception) to December 31, 2020 and from June 22, 2020 (inception) to September 30, 2020, we raised \$5.0 million gross proceeds from the SAFE which was subsequently converted to 1,963,093 shares of Series A convertible preferred stock and \$25.0 million gross proceeds from the issuance of 9,815,467 shares of Series A convertible preferred stock at a purchase price of \$2.547 per share. Costs associated with these issuances were approximately \$0.2 million.
- During the nine months ended September 30, 2021, we raised \$20.0 million gross proceeds from the issuance of 7,852,373 shares of Series A convertible preferred stock at a purchase price of \$2.547 per share and \$90.0 million gross proceeds from the issuance of 25,657,096 shares of Series B convertible preferred stock at \$3.5078 per share. Costs associated with these issuances were approximately \$0.5 million.

We have incurred significant operating losses since the commencement of our operations. Our ability to generate product revenue sufficient to achieve profitability will depend heavily on the successful development and eventual commercialization of one or more of our current therapeutic candidates or any future therapeutic candidates. Our accumulated deficit was \$28.5 million at December 31, 2020 and \$58.8 million at September 30, 2021, respectively. We expect to continue to incur significant losses for the foreseeable future as we advance our

[Table of Contents](#)

current and future therapeutic candidates through preclinical and clinical development, continue to build our operations and transition to operating as a public company. Without additional funding, we believe that we will not have sufficient funds to meet our obligations within the next twelve months from the date of issuance of our consolidated financial statements. These factors raise substantial doubt about our ability to continue as a going concern.

Based on our current operating plan, we expect the net proceeds from this offering, together with our existing cash, will be sufficient to fund our planned operating expenses and capital expenditure requirements into the fourth quarter of 2023.

Our net losses may fluctuate significantly from period to period, depending on the timing of expenditures on our research and development activities. Our primary use of cash is to fund operating expenses, which consist primarily of research and development and general and administrative expenses. The timing of payment of these expenses has an effect on cash used to fund operating expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

We expect to continue to incur net operating losses for at least the next several years, and we expect our research and development expenses, general and administrative expenses, and capital expenditures will continue to increase. We expect our expenses and capital requirements will increase significantly in connection with our ongoing activities as we:

- continue our ongoing and planned research and development of our VGL101 and small molecule TREM2 agonist program;
- initiate preclinical studies and clinical trials for any additional therapeutic candidates that we may pursue in the future;
- expand our product pipeline based on TREM2 and other microglia targets across multiple therapeutic modalities, through internal discovery and development, or through strategic collaborations or alliances with academic organizations, pharmaceutical or biotechnology companies;
- seek regulatory approvals for any therapeutic candidates that successfully complete clinical trials;
- invest in capital equipment in order to expand our research and development activities;
- attract, hire and retain additional clinical, scientific, quality control, and manufacturing management and administrative personnel;
- add clinical, operational, financial and management information systems and personnel, including personnel to support our product development;
- develop, maintain, expand, protect and enforce our intellectual property portfolio, including patents, trade secrets and know-how;
- acquire or in-license other therapeutic candidates and technologies;
- expand our operations in the United States and to other geographies;
- incur additional legal, accounting, investor relations and other general and administrative expenses associated with operating as a public company; and
- establish a sales, marketing and distribution infrastructure, either ourselves or in partnership with others, to commercialize any therapeutic candidates, if approved.

We will not generate revenue from product sales unless and until we successfully complete clinical development and obtain regulatory approval for one or more of our therapeutic candidates. If we obtain regulatory approval for any of our therapeutic candidates, we expect to incur significant expenses related to

[Table of Contents](#)

product sales, marketing and distribution to the extent that such sales, marketing and distribution are not the responsibility of potential collaborators. We may also require additional capital to pursue in-licenses or acquisitions of other drug candidates. Further, following the completion of this offering we expect to incur additional costs associated with operating as a public company.

We also expect to increase the size of our administrative function to support the growth of our business. Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year, depending on the timing of our clinical trials and our expenses related to other research and development activities.

As a result, we will require substantial additional funding to develop our therapeutic candidates and support our continuing operations. Until such time that we can generate significant revenue from product sales or other sources, we expect to finance our operations through the sale of equity, debt financings or other capital sources, which could include proceeds from potential collaborations, strategic partnerships or marketing, distribution, licensing or other strategic arrangements with third parties. We may be unable to raise additional funds or to enter into such agreements or arrangements on favorable terms, or at all. Our ability to raise additional funds may be adversely impacted by potential worsening global economic conditions and the recent disruptions to, and volatility in, the credit and financial markets in the United States and worldwide resulting from the ongoing COVID-19 pandemic and otherwise. If we fail to raise capital or enter into such agreements as, and when, needed, we may have to significantly delay, scale back or discontinue the development or commercialization of our therapeutic candidates or grant rights to develop and market therapeutic candidates that we would otherwise prefer to develop and market ourselves.

Our failure to obtain sufficient funds with acceptable terms could have a material adverse effect on our business, results of operations or financial condition, including requiring us to have to delay, reduce or eliminate our product development or future commercialization efforts. Because of the numerous risks and uncertainties associated with pharmaceutical product development, we are unable to accurately predict the amount of increased expenses or timing, or if we will be able to achieve or maintain profitability. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce or terminate our operations. We cannot provide assurance that we will ever be profitable or generate positive cash flow from operating activities. Without giving effect to the anticipated net proceeds from this offering, as of November 19, 2021, we expect that our existing cash and cash equivalents will be sufficient to fund our operating expenses and capital expenditure requirements into the fourth quarter of 2022. Beyond that point, we will need to raise additional capital to finance our operations, which cannot be assured. We concluded as of October 8, 2021, the issuance date of our consolidated financial statements for the period from June 22, 2020 (inception) to December 31, 2020, and as of November 19, 2021, the issuance date of our interim consolidated financial statements for the nine months ended September 30, 2021, that this circumstance raised substantial doubt about our ability to continue as a going concern within one year of the issuance date of those consolidated financial statements. See Note 1 to our consolidated financial statements included elsewhere in this prospectus for additional information on our assessment.

Impact of COVID-19 on Our Operations

In March 2020, the World Health Organization declared the outbreak of COVID-19 a global pandemic. We are subject to a number of risks associated with the COVID-19 global pandemic, including potential delays associated with our ongoing preclinical studies and anticipated clinical trials. COVID-19 may have an adverse impact on our operations, supply chains and distribution systems or those of our third-party vendors and collaborators, and increase expenses, including as a result of impacts associated with preventive and precautionary measures that are being taken, such as restrictions on travel and border crossings, quarantine policies and social distancing. We and our third-party vendors and collaborators may experience disruptions in supply of items that are essential for our research and development activities. In addition, the spread of COVID-19 has disrupted global healthcare and healthcare regulatory systems which could divert healthcare

[Table of Contents](#)

resources away from, or materially delay, FDA approval and approval by other health authorities worldwide with respect to our therapeutic candidates. Furthermore, our anticipated clinical trials may be negatively affected by the COVID-19 outbreak. Site initiation, patient enrollment and patient follow-up visits may be delayed, for example, due to prioritization of hospital resources toward the COVID-19 outbreak, travel restrictions, the inability to access sites for initiation and monitoring, and difficulties recruiting or retaining patients in our planned clinical trials. We cannot at this time predict the specific extent, duration, or full impact that the COVID-19 outbreak will have on our financial condition and operations. If we do not successfully commercialize any of our therapeutic candidates, we will be unable to generate product revenue or achieve profitability.

Exclusive License Agreement with Amgen Inc.

In July 2020, we entered into an exclusive license agreement, or the Amgen Agreement, with Amgen Inc., or Amgen, pursuant to which we have been granted an exclusive, royalty-bearing license to certain intellectual property rights owned or controlled by Amgen, to commercially develop, manufacture, use, distribute and sell therapeutic products containing compounds that bind to TREM2. In addition, we are required to reimburse Amgen for amounts it paid to its contract manufacturers on our behalf. See “Business Section—Exclusive License Agreement with Amgen Inc.” and Note 12 to the consolidated financial statements appearing elsewhere in this prospectus for more information on the Amgen Agreement.

As initial consideration for the license, we paid an upfront payment of \$0.5 million and also recognized an obligation to issue shares of Series A convertible preferred stock with an antidilution provision, or the Related Party Antidilution Obligation. As of September 30, 2021, Amgen owned approximately 15.08% of our outstanding shares of capital stock. As additional consideration for the license, we are required to pay Amgen up to \$80.0 million in the aggregate upon the achievement of specified regulatory milestones for the first monoclonal antibody TREM2 agonist (mAb) product and the first small molecule TREM2 agonist product and aggregate milestone payments of up to \$350.0 million upon the achievement of specific commercial milestones across all mAb products and small molecule products. No regulatory or commercial milestones have been achieved to date under the Amgen Agreement. We are also required to pay tiered royalties of low to mid single-digit percentages on annual net sales of the products covered by the license. In the event that the exploitation of a product is not covered by a valid claim within the licensed patent rights, then the royalty rate with respect to the net sales shall be subject to a customary reduction by a certain percentage. The royalty term will terminate on a country-by-country basis on the later of (i) the expiration date of the last valid claim within the licensed patent rights and (ii) the tenth (10th) anniversary of the first commercial sale of such product in such country.

In connection with the license agreement, Amgen entered into certain stockholder agreements related to this investment. See “Certain Relationships and Related Party Transactions—Series A Preferred Stock Financings.”

Components of Our Results of Operations

Operating Expenses

Our operating expenses since inception have consisted solely of research and development expenses and general and administrative expenses.

Related Party Acquired In-process Research and Development

Related party acquired in-process research and development, or IPR&D, expenses consist primarily of the upfront costs to acquire the IPR&D assets at inception of the Amgen Agreement and the initial recognition of the fair value of the Related Party Antidilution Obligation. Upfront and milestone payments are accrued for and expensed as IPR&D expense when the achievement of the milestone is probable up to the point of regulatory

approval. Milestone payments made upon regulatory approval will be capitalized and amortized over the remaining useful life of the related product. We did not incur related party IPR&D expenses during the nine months ended September 30, 2021.

Research and Development

Research and development expenses consist of costs incurred for our research activities, including our discovery efforts and the development of our programs. These expenses include:

- employee related expenses, including salaries, related benefits, and stock-based compensation expense for employees engaged in research and development functions;
- expenses incurred in connection with the discovery and preclinical development of our VGL101 and small molecule TREM2 agonist program;
- expenses incurred under agreements with third parties, such as consultants, clinical investigators, contractors and contract research organizations, or CROs, that assist with (i) the preclinical studies of VGL101 and (ii) identification of potential therapeutic candidates in our small molecule TREM2 agonist program;
- the cost of developing and scaling our manufacturing process and manufacturing therapeutic candidates for use in our research and preclinical studies, including under agreements with third parties, such as consultants, contractors, and contract manufacturing organizations, or CMOs;
- payments made under our licensing agreement with a related party; and
- other expenses incurred as a result of research and development activities.

Research and development expenses account for a significant portion of our operating expenses. We expense research and development costs as incurred. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made. When third-party service providers' billing terms do not coincide with our period-end, we are required to make estimates of our obligations to those third parties incurred in a given accounting period and record accruals at the end of the period. We base these estimates on our knowledge of the research and development programs, services performed for the period, past history for related activities and the expected duration of the third-party service contract, where applicable. If timelines or contracts are modified based upon changes in the scope of work to be performed, we modify our estimates of accrued expenses accordingly on a prospective basis. Actual results could differ from our estimates.

Our direct research and development expenses are tracked on a program-by-program basis and consist primarily of external costs, such as fees paid to CROs, CMOs, central laboratories and outside consultants in connection with our research and discovery, preclinical development, process development, manufacturing, clinical development, regulatory and quality activities. We do not allocate employee costs or facility expenses, including depreciation or other indirect costs, to specific programs because these costs are deployed across multiple programs. Our internal resources conduct our research and discovery activities and manage our preclinical development and process development, manufacturing and clinical development activities.

[Table of Contents](#)

The table below summarizes our research and development expenses incurred by program:

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020	Nine Months Ended September 30, 2021
(\$ in thousands)			
Direct, external research and development expenses by program:			
VGL101	\$ 974	\$ 78	\$ 12,082
Small molecule TREM2	1,087	254	3,487
Unallocated research and development expenses:			
External costs and other	946	532	2,635
Facilities, personnel-related, and other	1,507	473	5,007
Total research and development expenses	<u>\$ 4,514</u>	<u>\$ 1,337</u>	<u>\$ 23,211</u>

Research and development activities are central to our business model. Therapeutic candidates in later stages of clinical development generally have higher development costs than those in earlier stages, primarily due to the increased size and duration of later-stage clinical trials. As a result, we expect that our research and development expenses will increase substantially over the next several years as we expect to (i) advance VGL101 and our small molecule TREM2 agonist programs' initial clinical trials, (ii) develop VGL101 for other indications, including other rare leukodystrophies, and leukoencephalopathies, and (iii) expand our modality agnostic product pipeline to other microglia targets beyond TREM2.

The successful development and commercialization of our therapeutic candidates is highly uncertain. At this time, we cannot reasonably estimate or know the nature, timing and costs of the efforts that will be necessary to complete the preclinical and clinical development of any of our therapeutic candidates. This uncertainty is due to the numerous risks and uncertainties associated with product development and commercialization, including the uncertainty of:

- the timing, design and successful completion of preclinical studies and clinical development activities;
- the sufficiency of our financial and other resources to complete the necessary preclinical studies and clinical trials;
- effective INDs or comparable foreign applications that allow commencement of our planned clinical trials or future clinical trials for any therapeutic candidates we may develop;
- successful enrollment and completion of clinical trials, including under the FDA's Good Clinical Practices, Good Laboratory Practices, and any additional regulatory requirements from foreign regulatory authorities;
- positive results from our future clinical trials that support a finding of safety and effectiveness and an acceptable risk-benefit profile in the intended populations;
- the receipt of regulatory marketing approvals from applicable regulatory authorities;
- the establishment of arrangements with third-party manufacturers for clinical supply and, where applicable, commercial manufacturing capabilities;
- the establishment, maintenance, defense and enforcement of patent, trademark, trade secret and other intellectual property protection or regulatory exclusivity for any therapeutic candidates we may develop;
- patient recruitment and enrollment;
- commercial launch of any therapeutic candidates we may develop, if approved, whether alone or in collaboration with others;

Table of Contents

- acceptance of the benefits and use of our therapeutic candidates we may develop, including method of administration, if and when approved, by patients, the medical community and third-party payors;
- our ability to compete effectively with other therapies and treatment options;
- maintenance of a continued acceptable safety, tolerability and efficacy profile of any therapeutic candidates we may develop following approval;
- establishment and maintenance of healthcare coverage and adequate reimbursement by payors;
- our ability to establish new licensing or collaboration arrangements;
- the performance of our future collaborators, if any;
- development and timely delivery of commercial-grade drug formulations that can be used in our planned clinical trials and, if approved, for commercial launch;
- obtaining, maintaining, defending and enforcing patent claims and other intellectual property rights;
- launching commercial sales of our therapeutic candidates, if approved, whether alone or in collaboration with others; and
- maintaining a continued acceptable safety profile of the therapeutic candidates following approval.

Any changes in the outcome of any of these variables with respect to the development of our therapeutic candidates in preclinical and clinical development could mean a significant change in the costs and timing associated with the development of these therapeutic candidates. For example, if the FDA or another regulatory authority were to delay our planned start of clinical trials or require us to conduct clinical trials or other testing beyond those that we currently expect, or if we experience significant delays in enrollment in any of our planned clinical trials, we could be required to expend significant additional financial resources and time to complete clinical development of that therapeutic candidate. We may never obtain regulatory approval for any of our therapeutic candidates, and, even if we do, drug commercialization takes several years and millions of dollars in development costs.

General and Administrative

General and administrative expenses consist primarily of personnel expenses, including salaries, benefits and stock-based compensation expense, for personnel in executive, accounting, business development, legal, human resources and administrative functions. General and administrative expenses also include corporate facility costs not otherwise included in research and development expenses, depreciation and other expenses, which include direct or allocated expenses for rent and maintenance of facilities and insurance, not otherwise included in research and development expenses, as well as professional fees for legal, consulting, investor and public relations, accounting and audit services.

We expect that our general and administrative expenses will increase in the foreseeable future as we increase our headcount to support the continued research and development of our programs and the growth of our business. We also anticipate incurring additional expenses associated with operating as a public company, including increased expenses related to audit, legal, regulatory, compliance, director and officer insurance, investor and public relations and tax-related services associated with maintaining compliance with the rules and regulations of the Securities and Exchange Commission, or SEC, and standards applicable to companies listed on a national securities exchange, additional insurance expenses, investor relations activities and other administrative and professional services.

Other Income (Expense)

Change in Fair Value of Related Party Antidilution Obligation

Pursuant to the Amgen Agreement, we agreed to issue Amgen equity in an amount equal to 25% of our capital stock on a fully diluted basis until such time as we have raised an aggregate of \$45.0 million in net cash

proceeds from financing activities relating to dilutive transactions including the Related Party Antidilution Obligation. In September 2020, we completed the first closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement, and as a result issued Amgen 6,928,566 shares of Series A convertible preferred stock such that Amgen's ownership represented 25% of the post-closing capitalization on a fully diluted basis. The Related Party Antidilution Obligation was separately exercisable from the Amgen Agreement and was classified as a liability and recorded at fair value in the consolidated balance sheet with a corresponding charge to research and development at inception of the license agreement in July of 2020. The Related Party Antidilution Obligation was remeasured at fair value at each reporting period, with changes in fair value recorded in change in fair value of Related Party Antidilution Obligation in the consolidated statement of operations and comprehensive loss. In September 2020, the Related Party Antidilution Obligation was partially settled through the issuance of 6,928,566 shares of Series A convertible preferred stock with a fair value of \$17.5 million. In May 2021, we settled the remaining Related Party Antidilution Obligation in full with the second closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement. Amgen received an additional 1,963,093 shares of Series A convertible preferred stock with a fair value of \$5.1 million.

Change in Fair Value of Series A Preferred Stock Tranche Obligation

In September 2020, we entered into the Series A Convertible Preferred Stock Purchase Agreement and issued 9,815,467 shares of Series A convertible preferred stock at a purchase price of \$2.547 per share, for gross cash proceeds of \$25.0 million. The gross proceeds were offset by \$0.2 million of issuance costs and \$0.2 million related to the Series A Preferred Tranche Obligation, discussed below. Concurrently with this issuance, the SAFE converted to 1,963,093 shares of Series A convertible preferred stock. As part of the September 2020 Series A Convertible Preferred Stock Purchase Agreement, the investors were contingently obligated to purchase 7,852,373 additional shares of Series A convertible preferred stock at \$2.547 per share upon the satisfaction of specified research and development milestones, collectively, the Series A Preferred Stock Tranche Obligation. The Series A Preferred Stock Tranche Obligation was legally detachable and separately exercisable from the Series A convertible preferred stock. As such, we allocated the proceeds from the September 2020 issuance between the Series A Preferred Stock Tranche Obligation and the Series A convertible preferred stock. As the Series A convertible preferred stock is redeemable upon a deemed liquidation event at the election of the holder controlled Board, and therefore outside of the control of our company, the Series A Preferred Stock Tranche Obligation was classified as a liability and recorded at its fair value. The Series A Preferred Stock Tranche Obligation was remeasured at fair value at each reporting period, with changes in fair value recorded in change in fair value of Series A Preferred Stock Tranche Obligation in the consolidated statement of operations and comprehensive loss.

Interest Income

Interest income consists of interest earned from our cash and cash equivalents. We expect our interest income will increase slightly as we invest the cash received from our sales of Series B preferred stock in August 2021 and the net proceeds from this offering. Interest income was immaterial during the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 and the nine months ended September 30, 2021.

Other Expense, net

Other expense, net includes gains and losses from the remeasurement of foreign currency transactions into our functional currency. Other expense, net was immaterial during the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 and the nine months ended September 30, 2021.

Income Taxes

Since our inception, we have not recorded any income tax benefits for the net losses we have incurred in each year or for our research and development tax credits, as we believe, based upon the weight of available

[Table of Contents](#)

evidence, that it is more likely than not that all of our net operating loss, or NOL, carryforwards and tax credits will be realized. As of December 31, 2020, we had federal NOL carryforwards of approximately \$5.3 million and state NOL carryforwards of approximately \$5.2 million which may be available to offset future taxable income and begin to expire in 2036. The total federal NOL of \$5.3 million are not subject to expiration. As of December 31, 2020, we also had state tax research and development credit carryforwards of approximately \$78 thousand to offset future tax liabilities, which begin to expire in 2029. As of December 31, 2020, we had no federal tax research and development credit carryforwards. We have recorded a full valuation allowance against our net deferred tax assets at December 31, 2020. As of December 31, 2020, we had no unrecognized tax benefits.

Results of Operations

Period from June 22, 2020 (inception) to December 31, 2020

The following table summarizes our results of operations for the period from June 22, 2020 (inception) to December 31, 2020:

	Period from June 22, 2020 (Inception) to December 31, 2020 (\$ in thousands)
Operating expenses:	
Related party acquired in-process research and development	\$ 20,923
Research and development	4,514
General and administrative	1,777
Total operating expenses	27,214
Loss from operations	(27,214)
Other income (expense):	
Change in fair value of the related party antidilution obligation	(1,307)
Change in fair value of Series A preferred stock tranche obligation	(24)
Interest income	—
Other expense, net	(1)
Total other expense, net	(1,332)
Net loss and comprehensive loss	\$ (28,546)

The description of material changes from period to period required by Item 303 of Regulation S-K cannot be presented as no company-related activities were performed by any party before our company was formed on June 22, 2020 and there are no comparative earlier periods for purposes of this analysis. Accordingly, the following discussion presents the components of our expenses for the periods presented.

Related Party Acquired In-process Research and Development Expenses

Related party acquired IPR&D expenses were \$20.9 million for the period from June 22, 2020 (inception) to December 31, 2020 and consisted of the costs to acquire the IPR&D assets at inception of the Amgen Agreement, including (i) \$20.4 million initial recognition of a Related Party Antidilution Obligation that obligates us to issue shares of the Series A convertible preferred stock equal to 25% of our capital stock until we have raised \$45.0 million in net cash proceeds from equity financings and (ii) the upfront cash consideration for the license arrangement of \$0.5 million.

[Table of Contents](#)

Research and Development Expenses

Research and development expenses were \$4.5 million for the period from June 22, 2020 (inception) to December 31, 2020 and consisted primarily of the following:

- \$1.0 million of VGL101 program expenses;
- \$1.1 million of small molecule TREM2 agonist program expenses;
- \$0.9 million of external costs and other expenses; and
- \$1.5 million of facilities, personnel-related and other expenses, of which \$1.4 million related to personnel-related costs, including salaries, bonuses, and other compensation-related costs, including stock-based compensation of \$0.1 million

General and Administrative Expenses

General and administrative expenses were \$1.8 million for the period from June 22, 2020 (inception) to December 31, 2020 and consisted primarily of the following:

- \$0.8 million of personnel-related costs, including salaries, bonuses, and other compensation-related costs, including stock-based compensation of \$0.2 million;
- \$0.7 million of professional fees, including legal, accounting and other expenses; and
- \$0.3 million of other general and administrative expenses

Change in Fair Value of Related Party Antidilution Obligation

The change in fair value of Related Party Antidilution Obligation was \$1.3 million for the period from June 22, 2020 (inception) to December 31, 2020 and related to the remeasurement to fair value of the Related Party Antidilution Obligation at December 31, 2020.

Change in Fair Value of Series A Preferred Stock Tranche Obligation

The change in fair value of Series A Preferred Stock Tranche Obligation was \$24 thousand for the period from June 22, 2020 (inception) to December 31, 2020 and related to the remeasurement to fair value of the Series A Preferred Stock Tranche Obligation at December 31, 2020.

[Table of Contents](#)***Period from June 22, 2020 (inception) to September 30, 2020 Compared with Nine Months Ended September 30, 2021***

The following table summarizes our results of operations for the period from June 22, 2020 (inception) to September 30, 2020 and the nine months ended September 30, 2021:

	Period from June 22, 2020 (Inception) to September 30, 2020	Nine Months Ended September 30, 2021
	(\$ in thousands)	
Operating expenses:		
Related party acquired in-process research and development	\$ 20,923	\$ —
Research and development	1,337	23,211
General and administrative	895	6,221
Total operating expenses	<u>23,155</u>	<u>29,432</u>
Loss from operations	(23,155)	(29,432)
Other income (expense):		
Change in fair value of the related party antidilution obligation	(1,152)	(836)
Change in fair value of Series A preferred stock tranche obligation	(3)	(28)
Interest income	—	3
Other expense, net	—	(5)
Total other expense, net	<u>(1,155)</u>	<u>(866)</u>
Net loss and comprehensive loss	<u>\$ (24,310)</u>	<u>\$ (30,298)</u>

As the June 22, 2020 (inception) to September 30, 2020 period contained approximately three months of expenses whereas the nine months ended September 30, 2021 period contained nine months of expenses, expenses have generally increased as a result of the additional six months of activity and an increase in headcount in the nine months ended September 30, 2021.

Research and Development Expenses

Research and development expenses were \$1.3 million for the period from June 22, 2020 (inception) to September 30, 2020 as compared to \$23.2 million for the nine months ended September 30, 2021. The increase of \$21.9 million was primarily due to the following:

- \$7.7 million of external manufacturing expenses related to the development and manufacturing of VGL101, which was primarily incurred during the nine months ended September 30, 2021. These manufacturing expenses are primarily related to the drug substance manufacturing of VGL101, which we expect to use in conducting our clinical trials;
- \$4.3 million of VGL101 program expenses, including \$2.8 million associated with IND-enabling studies;
- \$3.2 million of small molecule TREM2 agonist program expenses;
- \$2.1 million of external costs and other expenses; and
- \$4.5 million of facilities, personnel-related and other expenses, of which \$4.1 million related to personnel-related costs, including salaries, bonuses, and other compensation-related costs, including stock-based compensation of \$0.5 million. Increases in personnel-related and other expenses were driven by an increase in headcount to support our research and development programs during the nine months ended September 30, 2021.

[Table of Contents](#)

General and Administrative Expenses

General and administrative were \$0.9 million for the period from June 22, 2020 (inception) to September 30, 2020 as compared to \$6.2 million for the nine months ended September 30, 2021. The increase of \$5.3 million was primarily due to the following:

- \$2.5 million of personnel-related costs, including salaries, bonuses and other compensation-related costs, including stock-based compensation of \$0.8 million. Increases in personnel-related and other expenses were driven by an increase in headcount for additional personnel to support our growing operational activities during the nine months ended September 30, 2021;
- \$2.0 million of professional fees, including legal, accounting and other expenses; and
- \$0.8 million of other general and administrative expenses.

Change in Fair Value of the Related Party Antidilution Obligation

The change in fair value of the Related Party Antidilution Obligation was \$1.2 million during the period from June 22, 2020 (inception) to September 30, 2020, as compared to \$0.8 million for the nine months ended September 30, 2021. This decrease of \$0.4 million was related to the remeasurement to fair value of the Related Party Antidilution Obligation associated with the Amgen Agreement as well as the partial settlement of the Related Party Antidilution Obligation which was fully settled in May 2021. On September 18, 2020, we completed the first closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement which triggered the partial settlement of the Related Party Antidilution Obligation resulting in the issuance of 6,928,566 shares of its Series A convertible preferred stock to Amgen. On May 28, 2021, we completed the second closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement which resulted in our raising of net cash proceeds from financing activities in excess of the \$45.0 million Related Party Antidilution Obligation cap. The second closing triggered the settlement of the remaining Related Party Antidilution Obligation, resulting in the issuance of 1,963,093 shares of Series A convertible preferred stock to Amgen with a fair value of \$5.1 million.

Change in Fair Value of Series A Preferred Stock Tranche Obligation

The change in fair value of Series A Tranche Obligation was \$3 thousand during the period from June 22, 2020 (inception) to September 30, 2020 as compared to \$28 thousand for the nine months ended September 30, 2021. This increase of \$25 thousand was related to the remeasurement to fair value of the Series A Preferred Stock Tranche Obligation associated with the Series A Convertible Preferred Stock Purchase Agreement. In May 2021, we settled the Series A Tranche Obligation with the issuance of 7,852,373 shares of our Series A Convertible Preferred Stock.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have not generated any revenue from product sales and have incurred significant operating losses and negative cash flows from our operations. We expect to incur significant expenses and operating losses for the foreseeable future as we advance the clinical development of our therapeutic candidates. Since our inception through September 30, 2021, we have funded our operations with net proceeds from sales of our convertible preferred stock and SAFE of \$139.5 million. As of September 30, 2021, we had cash and cash equivalents of \$110.7 million.

Without additional funding, we believe that we will not have sufficient funds to meet our obligations within the next twelve months from the date of issuance of our consolidated financial statements. These factors raise substantial doubt about our ability to continue as a going concern.

[Table of Contents](#)

Based on our current operating plan, we expect the net proceeds from this offering, together with our existing cash, will be sufficient to fund our planned operating expenses and capital expenditure requirements into the fourth quarter of 2023.

Cash Flows

The following table summarizes our sources and uses of cash for each of the periods presented:

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (\$ in thousands)	Nine Months Ended September 30, 2021
Net cash used in operating activities	\$ (5,180)	\$ (1,282)	\$ (22,000)
Net cash used by investing activities	\$ (500)	\$ (500)	\$ (177)
Net cash provided by financing activities	\$ 29,831	\$ 29,904	\$ 109,609
Net increase in cash, cash equivalents and restricted cash	\$ 24,151	\$ 28,122	\$ 87,432

Operating Activities

During the period from June 22, 2020 (inception) to December 31, 2020, operating activities consisted primarily of our net loss of \$28.5 million, partially offset by (i) \$20.9 million acquired IPR&D fee associated with the Amgen Agreement, (ii) \$1.3 million change in Related Party Antidilution Obligation, (iii) \$0.8 million of changes in operating assets and liabilities and (iv) \$0.3 million stock-based compensation expense. The net loss consisted of \$20.9 million of related party acquired IPR&D, \$4.5 million of research and development expenses, \$1.8 million of general and administrative expenses and a \$1.3 million unfavorable change in fair value of Related Party Antidilution.

During the period from June 22, 2020 (inception) to September 30, 2020, operating activities consisted primarily of our net loss of \$24.3 million, partially offset by (i) \$20.9 million acquired IPR&D fee associated with the Amgen Agreement, (ii) \$0.9 million of changes in operating assets and liabilities, (iii) \$1.2 million change in Related Party Antidilution Obligation and (iv) \$0.1 million stock-based compensation expense. The net loss consisted of \$20.9 million of related party acquired in-process research and development, \$1.3 million of research and development expenses, \$0.9 million of general and administrative expenses and a \$1.2 million unfavorable change in fair value of Related Party Antidilution Obligation.

During the nine months ended September 30, 2021, operating activities consisted primarily of our net loss of \$30.3 million, partially offset by (i) \$6.0 million of changes in operating assets and liabilities, (ii) \$0.8 million change in Related Party Antidilution Obligation and (iii) \$1.3 million stock-based compensation expense. The net loss primarily consisted of \$23.2 million of research and development expenses, \$6.2 million of general and administrative expenses and a \$0.8 million unfavorable change in fair value of Related Party Antidilution Obligation.

Investing Activities

During the period from June 22, 2020 (inception) to December 31, 2020, and the period from June 22, 2020 (inception) to September 30, 2020, net cash used by investing activities consisted of \$0.5 million paid as part of the Amgen Agreement.

During the nine months ended September 30, 2021, net cash used by investing activities consisted of \$0.2 million of capital expenditures.

Financing Activities

During the period from June 22, 2020 (inception) to December 31, 2020 and the period from June 22, 2020 (inception) to September 30, 2020, net cash provided by financing activities consisted primarily of \$5.0 million in gross proceeds from the SAFE and \$25.0 million gross proceeds from the issuance of 9,815,467 shares of Series A convertible preferred stock at a purchase price of \$2.547 per share. The gross proceeds are partially offset by approximately \$0.2 million and \$0.1 million of issuance costs during the period from June 22, 2020 (inception) to December 31, 2020 and the period from June 22, 2020 (inception) to September 30, 2020, respectively.

During the nine months ended September 30, 2021, net cash provided by financing activities consisted primarily of \$20.0 million gross proceeds from the issuance of 7,852,373 shares of Series A convertible preferred stock at a purchase price of \$2.547 per share, and \$90.0 million gross proceeds from the issuance of 25,657,096 shares of Series B convertible preferred stock at \$3.5078 per share, offset by approximately \$0.4 million of issuance costs.

Our primary uses of cash are to fund our research and development activities related to our VGL101 and small molecule TREM2 agonist program, hiring personnel, raising capital and providing general and administrative support for these operations.

We currently have no ongoing material financing commitments that are expected to affect our liquidity over the next five years, other than our lease obligations and a \$0.9 million standby letter of credit we entered into in September 2021, in connection with a lease for laboratory and office space in Watertown, Massachusetts. The standby letter of credit expires in December 2032. See “—Contractual Obligations and Commitments”.

Funding Requirements

To date, we have not generated any revenue from product sales. We do not expect to generate revenue from product sales unless and until we successfully complete clinical development of, receive regulatory approval for, and commercialize, VGL101, and we do not know when, or if at all, that will occur. We expect our expenses and capital requirements to increase significantly in connection with our ongoing activities, particularly as we continue the research and development of, initiate clinical trials of, and seek marketing approval for our VGL101 and small molecule TREM2 agonist program. In addition, if we obtain regulatory approval for any of our therapeutic candidates, we expect to incur significant expenses related to product sales, marketing, and distribution to the extent that such sales, marketing and distribution are not the responsibility of potential collaborators. We may also require additional capital to pursue in-licenses or acquisitions of other drug candidates. Further, following the completion of this offering, we expect to incur additional costs associated with operating as a public company. Accordingly, we will require substantial additional funding to develop our therapeutic candidates and support our continuing operations. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce or eliminate our product development or future commercialization efforts.

Our future capital requirements will depend on many factors, including:

- the initiation, scope, progress, timing, results and costs of product discovery, preclinical studies and clinical trials for our therapeutic candidates or any future candidates we may develop;
- our ability to maintain our relationship with Amgen and any other key licensors or collaborators;
- the scope, prioritization and number of our research and development programs;
- the costs, timing and outcome of seeking and obtaining regulatory approvals from the FDA and comparable foreign regulatory authorities, including the potential for such authorities to require that we

Table of Contents

perform more preclinical studies or clinical trials than those that we currently expect or change their requirements on studies that had previously been agreed to;

- our ability to establish and maintain collaborations on favorable terms, if at all;
- the achievement of milestones or occurrence of other developments that trigger payments under any collaboration agreements we enter into;
- the extent to which we are obligated to reimburse, or entitled to reimbursement of, clinical trial costs under collaboration agreements, if any;
- the costs to establish, maintain, expand, enforce and defend the scope of our intellectual property portfolio, including preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending intellectual property-related claims;
- the extent to which we acquire or in-license other therapeutic candidates and technologies;
- the costs of securing manufacturing arrangements for commercial production;
- the costs of establishing or contracting for sales and marketing capabilities if we obtain regulatory approvals to market our therapeutic candidates; and
- our need to implement additional internal systems and infrastructure, including financial and reporting systems.

Identifying potential therapeutic candidates and conducting preclinical studies and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain regulatory approval and commercialize our therapeutic candidates. In addition, our therapeutic candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of products that we do not expect to be commercially available for many years, if at all. Accordingly, we will need to continue to rely on additional financing to achieve our business objectives. Adequate additional financing may not be available to us on acceptable terms, or at all.

Until such time, if ever, as we can generate significant revenue from product sales or other sources, we expect to finance our operations through the sale of equity, debt financings, or other capital sources, which could include proceeds from potential collaborations, strategic partnerships or marketing, distribution, licensing or other similar arrangements with third parties. However, we may be unable to raise additional funds or enter into such agreements or arrangements on favorable terms, or at all. Market volatility resulting from the COVID-19 pandemic or other factors could also adversely impact our ability to access capital as and when needed. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a common stockholder. Any future debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, selling or licensing our assets, making capital expenditures, declaring dividends or encumbering our assets to secure future indebtedness. Such restrictions could adversely impact our ability to conduct our operations and execute our business plan.

If we raise funds through collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or therapeutic candidates or to grant licenses on terms that may not be favorable to us. If we fail to raise capital or enter into such agreements as, and when, needed, we may have to significantly delay, scale back or discontinue the development or commercialization of our therapeutic candidates or grant rights to develop and market therapeutic candidates that we would otherwise prefer to develop and market ourselves.

[Table of Contents](#)

While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements included elsewhere in this prospectus, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our audited financial statements.

Research and Development

As part of the process of preparing our consolidated financial statements, we are required to estimate our accrued research and development expenses. This process involves estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of actual costs. The majority of our service providers invoice us in arrears for services performed, on a pre-determined schedule or when contractual milestones are met; however, some require advance payments. We make estimates of our accrued expenses as of each balance sheet date in the consolidated financial statements based on facts and circumstances known to us at that time. At each period end, we corroborate the accuracy of these estimates with the service providers and make adjustments, if necessary. Examples of estimated accrued research and development expenses include those related to fees paid to:

- vendors in connection with discovery and preclinical development activities;
- CROs in connection with preclinical studies and testing; and
- CMOs in connection with the process development and scale up activities and the production of materials.

We record the expense and accrual related to contract research and manufacturing based on our estimates of the services received and efforts expended considering a number of factors, including our knowledge of the progress towards completion of the research, development, and manufacturing activities; invoicing to date under contracts; communication from the CROs, CMOs, and other companies of any actual costs incurred during the period that have not yet been invoiced; and the costs included in the contracts and purchase orders. The financial terms of these agreements are subject to negotiation, vary from contract to contract, and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the expense. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from the estimate, we adjust the accrual or the amount of prepaid expense accordingly. Although we do not expect our estimates to be materially different from amounts actually incurred, our understanding of the status and timing of services performed relative to the actual status and timing of services performed may vary and may result in reporting amounts that are too high or too low in any particular period. To date, there have not been any material adjustments to our prior estimates of accrued research and development expenses, however, there is no guarantee there will not be any such adjustments in the future.

Determination of Fair Value of Common Stock

As there has been no public market for our common stock to date, the estimated fair value of our common stock has been determined by our board of directors as of the date of each option grant, with input from management, considering our most recently available third-party valuations of common stock and our board of directors' assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent valuation through the date of the grant. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, Valuation of Privately-Held-Company Equity Securities Issued as Compensation.

Our common stock valuations were prepared using either an option pricing method, or OPM, or a hybrid method of OPM and probability-weighted expected return method, or PWERM. Both the OPM and hybrid

[Table of Contents](#)

method used market approaches to estimate our enterprise value. The OPM treats common stock and preferred stock as call options on the total equity value of a company, with exercise prices based on the value thresholds at which the allocation among the various holders of a company's securities changes. Under this method, the common stock has value only if the funds available for distribution to stockholders exceeded the value of the preferred stock liquidation preferences at the time of the liquidity event, such as a strategic sale or a merger.

The PWERM is a scenario-based methodology that estimates the fair value of common stock based upon an analysis of future values for the company, assuming various outcomes. The common stock value is based on the probability-weighted present value of expected future investment returns considering each of the possible outcomes available as well as the rights of each class of stock. The future value of the common stock under each outcome is discounted back to the valuation date at an appropriate risk-adjusted discount rate and probability weighted to arrive at an indication of value for the common stock. A discount for lack of marketability of the common stock is then applied to arrive at an indication of value for the common stock.

The hybrid method is a hybrid between the PWERM and OPM, estimating the probability-weighted value across multiple scenarios but using the OPM to estimate the allocation of value within one or more of those scenarios. When using the hybrid method, we assumed two scenarios: an IPO scenario and a sale scenario. The IPO scenario estimated an equity value based on the guideline public company method under a market approach. The guideline public companies considered for this scenario consist of biopharmaceutical companies with recently completed initial public offerings. We converted our estimated future value in an IPO to present value using a risk-adjusted discount rate. The equity value for the sale scenario was estimated using the price of a recently issued preferred security, as well as a milestone-based tranche closing. We utilized an option pricing model to quantify or attribute value to these economic rights of convertible preferred stock as compared to the common stock, such as liquidation preferences, dividend provisions, and participation rights after liquidation preferences.

These third-party valuations were performed at various dates, which resulted in valuations of our common stock of \$1.89 as of September 18, 2020, \$3.78 as of May 1, 2021, \$6.02 as of July 21, 2021, \$9.57 as of October 14, 2021 and \$11.79 as of November 19, 2021. In addition to considering the results of these third-party valuations, our board of directors considered various objective and subjective factors to determine the fair value of our common stock as of each grant date, including:

- the prices at which we sold shares of preferred stock and the superior rights and preferences of the preferred stock relative to our common stock at the time of each grant;
- the progress of our research and development programs, including the status and results of preclinical studies for our therapeutic candidates;
- our stage of development and our business strategy;
- external market conditions affecting the biopharmaceutical industry and trends within the biopharmaceutical industry;
- our financial position, including cash on hand, and our historical and forecasted performance and operating results;
- the lack of an active public market for our common stock and our preferred stock;
- significant changes to the key assumptions underlying the factors used could have resulted in different fair values of common stock at each valuation date;
- the likelihood of achieving a liquidity event, such as an initial public offering, or IPO, or sale of our company in light of prevailing market conditions; and
- the analysis of IPOs and the market performance of similar companies in the therapeutics industry.

The assumptions underlying these valuations represented management's best estimate, which involved inherent uncertainties and the application of management's judgment. As a result, if we had used significantly

[Table of Contents](#)

different assumptions or estimates, the fair value of our common stock and our stock-based compensation expense could have been materially different.

Once a public trading market for our common stock has been established in connection with the completion of this offering, it will no longer be necessary for our board of directors to estimate the fair value of our common stock in connection with our accounting for granted stock options and other such awards we may grant, as the fair value of our common stock will be determined based on the quoted market price of our common stock.

Option Grants

The following table summarizes by grant date the number of shares subject to options granted since June 22, 2020 (inception), the per share exercise price of the options, the per share fair value of our common stock on each grant date and the per share estimated fair value of the options:

Grant Date	Number of Shares Subject to Options Granted	Per Share Exercise Price of Options	Per Share Fair Value of Common Stock on Grant Date	Per Share Estimated Fair Value of Options
July 8, 2020	306,503 ⁽¹⁾	\$ —	\$ 2.42 ⁽²⁾	\$ 2.42
November 19, 2020	1,171,274	\$ 1.89	\$ 3.53 ⁽³⁾	\$ 2.73
November 23, 2020	9,593	\$ 1.89	\$ 3.53 ⁽³⁾	\$ 2.74
February 23, 2021	70,152	\$ 1.89	\$ 3.53 ⁽³⁾	\$ 2.74
June 4, 2021	547,077	\$ 3.78	\$ 3.78	\$ 2.58
July 29, 2021	47,275	\$ 6.02	\$ 6.02	\$ 4.08
August 19, 2021	938,524	\$ 6.02	\$ 6.02	\$ 4.06
September 1, 2021	137,475	\$ 6.02	\$ 6.55 ⁽⁴⁾	\$ 4.52
October 14, 2021	109,258	\$ 9.57	\$ 9.57	\$ 6.16
November 4, 2021	155,054	\$ 9.57	\$ 11.79 ⁽⁵⁾	\$ 8.03
November 16, 2021	83,296	\$ 9.57	\$ 11.79 ⁽⁵⁾	
December 25, 2021	7,788	\$ 11.79	\$ 11.79	

(1) Includes 306,503 restricted shares granted in July 2020.

(2) At the time of the restricted share grants on July 8, 2020, our board of directors determined that the fair value of our common stock of \$0.0001 per share reasonably reflected the fair value of our common stock as of the grant date. However, as described below, the fair value of our common stock as of the date of this grant was adjusted in connection with a retrospective fair value assessment for accounting purposes.

(3) At the time of the option grants from November 19, 2020 to February 23, 2021, our board of directors determined that the fair value of our common stock of \$1.89 per share calculated in the third-party valuation as of September 18, 2020 described above reasonably reflected the fair value of our common stock as of the respective grant dates in that period. However, as described below, the fair value of our common stock as of the date of these grants was adjusted in connection with a retrospective fair value assessment for accounting purposes.

(4) At the time of the option grants on September 1, 2021, our board of directors determined that the fair value of our common stock of \$6.02 per share calculated in the third-party valuation as of July 21, 2021 described above reasonably reflected the fair value of our common stock as of the grant date. However, as described below, the fair value of our common stock as of the date of this grant was adjusted in connection with a retrospective fair value assessment for accounting purposes.

(5) At the time of the option grants on November 4 and 16, 2021, our board of directors determined that the fair value of our common stock of \$9.57 per share reasonably reflected the fair value of our common stock as of the grant date. However, as described below, the fair value of our common stock as of the date of this grant was adjusted in connection with a retrospective fair value assessment for accounting purposes.

[Table of Contents](#)

In the course of preparing for this offering, in June 2021, we performed a retrospective fair value assessment and concluded that (i) the fair value of our common stock underlying restricted shares that we granted on July 8, 2020 was \$2.42 per share for accounting purposes and (ii) the fair value of our common stock underlying stock options that we granted on November 19, 2020, November 23, 2020 and February 23, 2021 was \$3.53 per share for accounting purposes. These reassessed values were based, in part, upon third-party valuations of our common stock prepared on a retrospective basis as of July 8, 2020 and September 18, 2020, respectively. The third-party retrospective valuations were prepared using the OPM or the PWERM, both which used a market approach to determine our enterprise value.

In the course of preparing for this offering, in September 2021, we performed a retrospective fair value assessment and concluded that the fair value of our common stock underlying stock options that we granted on September 1, 2021 was \$6.55 per share for accounting purposes. The reassessed value was based, in part, upon a third-party valuation of our common stock prepared on a retrospective basis as of September 1, 2021. The third-party retrospective valuation was prepared using the hybrid method, which used a market approach to determine our enterprise value.

In the course of preparing for this offering, in November 2021, we performed a retrospective fair value assessment and concluded that the fair value of our common stock underlying stock options that we granted on November 4 and 16, 2021 was \$11.79 per share for accounting purposes. The reassessed value was based, in part, upon a third-party valuation of our common stock prepared on a retrospective basis as of November 19, 2021. The third-party retrospective valuation was prepared using the hybrid method, which used a market approach to determine our enterprise value.

We applied the fair values of our common stock from our retrospective fair value assessments performed in June 2021 and September 2021 to determine the fair value of the July 2020, November 2020, February 2021 and September 2021 awards as of each respective grant date and to calculate stock-based compensation expense for accounting purposes for all applicable periods, from the date such awards were granted.

Valuation of Series A Preferred Stock Tranche Obligation and Related Party Antidilution Obligation

The Series A Preferred Stock Tranche Obligation was valued using a probability-weighted present value model. The valuation model considered the probability of closing the tranche, the estimated future value of the Series A convertible preferred stock to be issued at each closing and the investment required at each closing. Future values were converted to present value using a discount rate appropriate for probability-adjusted cash flows. The Series A Preferred Stock Tranche Obligation was settled during the nine months ended September 30, 2021.

The Related Party Antidilution Obligation was valued using a probability-weighted expected return method, which requires a variety of inputs, including the probability of occurrence of events that would trigger the issuance of additional shares, the expected timing of such events, the expected value of the contingently issuable equity upon occurrence of a triggering event and a discount rate. The fair value of the Related Party Antidilution Obligation when it was settled in May 2021 was \$5.1 million which was based on 1,963,093 shares of preferred stock issued at a price of \$2.589 per share.

Emerging Growth Company Status

The Jumpstart Our Business Startups Act of 2012, or JOBS, permits an “emerging growth company” such as us to take advantage of an extended transition to comply with new or revised accounting standards applicable to public companies until those standards would otherwise apply to private companies. We have elected not to “opt out” of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard and will do so until such time that we either (i) irrevocably elect to “opt out” of such extended transition period or (ii) no longer qualify as an emerging growth company.

[Table of Contents](#)

There are other exemptions and reduced reporting requirements provided by the JOBS Act that we are currently evaluating. For example, as an “emerging growth company,” we are exempt from Sections 14A(a) and (b) of the Securities Exchange Act of 1934, as amended, which would otherwise require us to (1) submit certain executive compensation matters to shareholder advisory votes, such as “say-on-pay,” “say-on-frequency,” and “golden parachutes;” and (2) disclose certain executive compensation related items such as the correlation between executive compensation and performance and comparisons of our chief executive officer’s compensation to our median employee compensation. We also intend to rely on an exemption from the rule requiring us to provide an auditor’s attestation report on our internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act. We will continue to remain an “emerging growth company” until the earliest of the following: (1) the last day of the fiscal year following the fifth anniversary of the date of the completion of this offering; (2) the last day of the fiscal year in which our total annual gross revenue is equal to or more than \$1.07 billion; (3) the date on which we have issued more than \$1 billion in nonconvertible debt during the previous three years; or (4) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

Recently Issued Accounting Pronouncements

A description of recently issued accounting pronouncements that may potentially impact our financial position, results of operations and cash flows is disclosed in Note 2 to our consolidated financial statements included elsewhere in this prospectus.

Qualitative and Quantitative Disclosures about Market Risk

Interest Rate Risk

As of December 31, 2020, we had cash and cash equivalents of \$24.2 million. As of September 30, 2021, we had cash and cash equivalents of \$110.7 million. Interest income is sensitive to changes in the general level of interest rates. Our surplus cash has been invested in money market fund accounts and interest-bearing savings accounts. We have not entered into investments for trading or speculative purposes. Due to the conservative nature of our investment portfolio, which is predicated on capital preservation of investments with short-term maturities, we do not believe an immediate one percentage point change in interest rates would have a material effect on the fair market value of our portfolio, and therefore we do not expect our operating results or cash flows to be significantly affected by changes in market interest rates. As of December 31, 2020, and September 30, 2021, we had no debt outstanding. Therefore, we are not exposed to interest rate risk with respect to debt.

All of our employees and our operations are currently located in the United States. We have, from time to time, engaged in contracts with contractors or other vendors in a currency other than the U.S. dollar.

To date, we are not currently exposed to significant market risk related to changes in foreign currency exchange rates. Our operations may be subject to fluctuations in foreign currency exchange rates in the future.

We do not believe that inflation has had a material effect on our business, financial condition or results of operations. Our operations may be subject to inflation in the future.

BUSINESS

Overview

We are a microglia-focused company dedicated to improving the lives of patients, caregivers, and families affected by rare and common neurodegenerative diseases by pursuing the development of disease-modifying therapeutics to restore the vigilance of microglia. Microglia are the sentinel immune cells of the brain and play a critical role in maintaining central nervous system (CNS) health and responding to damage caused by disease. Leveraging recent research implicating microglial dysfunction in neurodegenerative diseases, we utilize a precision medicine approach to develop a pipeline of therapeutic candidates, initially addressing genetically defined patient subpopulations, that we believe will activate and restore microglial function. Our first therapeutic candidates are designed to activate Triggering Receptor Expressed on Myeloid Cells 2 (TREM2), a key microglial receptor protein that mediates responses to environmental signals in order to maintain brain health and whose dysfunction is linked to neurodegeneration. Our lead candidate, VGL101, is a fully human monoclonal antibody (mAb) that is designed to activate TREM2. In November 2021, the FDA cleared our Investigational New Drug application (IND) for VGL101 in ALS in doses up to 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second half of 2022. We are initially developing VGL101 for the treatment of adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP), a rare, genetically defined, and fatal neurodegenerative disease caused by microglial dysfunction. We intend to expand development of VGL101 for the treatment of additional rare leukoencephalopathies and leukodystrophies in which microglia play an essential role, including cerebral adrenoleukodystrophy (cALD). We are also developing a novel small molecule TREM2 agonist suitable for oral delivery to treat common neurodegenerative diseases associated with microglial dysfunction. The initial focus of our novel small molecule TREM2 agonist program is for the treatment of Alzheimer's disease (AD) in genetically defined patient subpopulations. We expect to select a development candidate by the first quarter of 2022 and, following IND-enabling studies, plan to initiate a first-in-human healthy volunteer trial. We believe our microglia focus, precision medicine approach, and pipeline, which spans multiple modalities, strongly position us to become a differentiated leader in the neurodegenerative therapeutic space.

Microglia sense signals in the brain, maintain homeostasis, and coordinate signal-specific downstream responses to clear pathogens and cellular debris that can evolve into disease-inducing agents. Homeostatic microglia transition to a neuroprotective disease-associated microglia (DAM) phenotype that maintains the anti-inflammatory CNS environment and removes protein clumps (misfolded protein aggregates that can form plaques) and cellular debris that accumulate in the brains of patients with neurodegenerative diseases and during normal aging. Microglial dysfunction, including the failure to transition to the DAM phenotype, is linked to a range of rare and common neurodegenerative diseases, including leukoencephalopathies, leukodystrophies, AD (particularly genetically defined AD subpopulations), and frontotemporal dementia (FTD). Preclinical data generated by third parties also support the modulation of microglia as a potential therapeutic approach in a variety of CNS diseases in the absence of a clear genetic link to microglial dysfunction such as Parkinson's disease (PD) and Multiple Sclerosis (MS).

TREM2 acts as a sensor to detect cellular debris, lipids, and other damage signals. The receptor's normal function is required for microglial transition to the neuroprotective DAM phenotype. TREM2's protective role in neurodegenerative diseases was discovered through genome-wide association studies (GWAS). Multiple third party studies in animal models and in humans have shown that TREM2 deficiency is a likely driver of neurodegeneration, and we believe such studies provide a compelling rationale for therapeutically activating TREM2 signaling to treat neurodegenerative diseases.

We believe that each of the therapeutic candidates in our pipeline has the potential to be developed for multiple neurodegenerative diseases. Our precision medicine approach begins with rare, genetically defined diseases for which microglial dysfunction is believed to be a key driver of disease pathology and then utilizes findings from these efforts to inform expansion into larger and more common neurodegenerative diseases. Our strategy has the potential to mitigate downstream translational risk as we seek to advance our programs through

[Table of Contents](#)

early development and into the clinic. We believe this iterative, sequential approach is a key differentiator, potentially allowing us to generate clinical proof-of-concept (PoC) efficiently and leverage our initial development programs as well as research by others, in pursuing additional neurodegenerative disease opportunities.

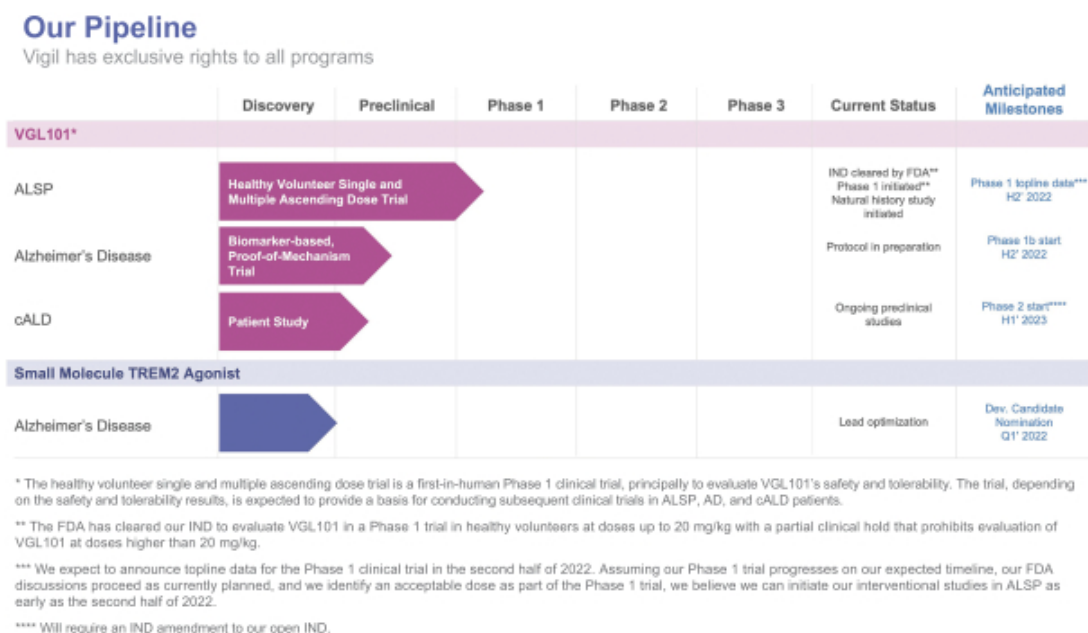
We are executing on this approach with our lead pipeline candidate, VGL101, by initially focusing on the treatment of ALS. ALS affects an estimated 10,000 people in the U.S., with about 1,000 to 2,000 new cases annually. ALS has been diagnosed in countries around the world, with major clusters in North America (U.S. and Canada), Central and Northern Europe, and Asia. ALS is caused by loss-of-function mutations in the Colony Stimulating Factor 1 Receptor (CSF1R), a receptor that shares a common downstream signaling pathway with TREM2. The therapeutic rationale for VGL101 is to compensate for CSF1R loss-of-function by activating TREM2. We have generated robust preclinical evidence that suggests TREM2 agonism can rescue CSF1R loss-of-function.

Engagement with our stakeholders, including patients and scientific and provider communities, is central to our approach in rare neurodegenerative diseases. In September 2021, we began a natural history study of ALS patients to better characterize the patient journey, inform our clinical trial design, and facilitate recruitment into our clinical trials. We actively support a patient advocacy organization and have created a strong global network of key opinion leaders (KOLs), centers of excellence, and genetic counseling practices that each treat ALS patients and work with families affected by the disease. We have also established the world's first patient-facing ALS informational website to build disease awareness.

Beyond VGL101, we are developing a novel small molecule TREM2 activator (agonist) for the treatment of AD. GWAS have shown that a specific mutation in a *TREM2* variant (R47H) has one of the strongest associations with the development of AD, second in magnitude only to that associated with the apolipoprotein E4 (*ApoE4*) genotype. Our strategy in AD is to follow a precision medicine approach that first establishes that VGL101 treatment has the potential to correct microglial dysregulation in AD within certain genetically defined patient subpopulations, including those carrying *TREM2* and other variants. If the studies support it, we plan to expand the development of our TREM2 agonist into broader AD patient populations.

AD is the most common cause of dementia affecting an estimated 6.2 million patients in the U.S. alone as well as their families and caregivers. The cost of care for people with AD to our healthcare system is substantial. According to the Alzheimer's Association, the aggregate cost of AD and other dementias is expected to be \$355 billion in 2021, and this number could increase to as much as \$1.1 trillion by 2050.

The following table highlights our preclinical and clinical programs.



Over time, we plan to expand our pipeline, either through internal discovery and development, or through strategic collaborations or alliances with academic organizations or pharmaceutical or biotechnology companies.

Our Corporate History and Team

We were co-founded in mid-2020 by Atlas Venture and shortly thereafter entered into a license agreement with Amgen Inc. (Amgen). Through the license agreement, we acquired exclusive worldwide rights to Amgen's TREM2 agonist program, including VGL101 and related molecules, the small molecule TREM2 agonist program, associated intellectual property, and certain manufacturing know-how.

We have built an experienced management team with a proven track record of drug discovery and development in neuroscience, as well as substantial operational and business expertise. Our CEO, Ivana Magovčević-Liebisch, PhD, JD, is an accomplished pharmaceutical and biotechnology executive with more than 20 years of senior management experience in financing, strategic partnerships, mergers and acquisitions, clinical development, regulatory affairs, commercialization, legal, and intellectual property strategies. Spyridon (Spyros) Papapetropoulos, MD, PhD, our Chief Medical Officer, is an experienced biopharmaceutical executive, recognized neuroscientist, and neurodegenerative disease clinician. Jennifer Ziolkowski, CPA, our Chief Financial Officer, has more than 25 years of executive management experience in various cross-functional finance and operational leadership roles. Evan A. Thackaberry, PhD, DABT, our Senior Vice President, Early Development, brings over 15 years of drug development experience and cross-functional leadership.

Our team is supported by a group of investors who have shared our vision and commitment to harness the power of microglia to develop transformative treatments for neurodegenerative diseases. As previously disclosed, through September 2021, we have raised approximately \$140 million, supported by a leading syndicate of investors, including Atlas Venture, Vida Ventures, Northpond Ventures, and Hatteras Venture Partners.

Our Business Strategy

Our goal is to be a leader in the development and commercialization of microglia-targeted, disease-modifying therapeutics that slow or halt progression of a range of rare and common neurodegenerative diseases. Key elements of our business strategy are to:

- **Apply our precision medicine approach to develop microglia-targeted therapies for patients with rare, genetically defined neurodegenerative diseases and subsequently advance into neurodegenerative diseases affecting larger patient populations.** The initial indications we are pursuing are rare diseases that have strong genetic, mechanistic, and biochemical associations with microglial dysfunction. We believe these associations provide a strong rationale for potential intervention with microglia-targeted therapies. By focusing on these known relationships, we believe we may mitigate downstream translational risk as we seek to advance our programs through early development and into the clinic. We expect this approach will allow us to identify biologically and clinically relevant biomarkers and to generate PoC efficiently. We plan to apply the specific learnings from these studies to pursue the development of our therapeutic candidates in other neurodegenerative disease indications with broader patient populations.
- **Advance our lead therapeutic candidate, VGL101, a mAb TREM2 agonist, for the treatment of ALS and other rare leukoencephalopathies and leukodystrophies.** We are currently developing VGL101, our fully human mAb that is highly selective for TREM2, for the treatment of ALS. We believe there is strong genetic, molecular, and cellular evidence implicating microglial dysfunction and signaling deficiency in ALS, which we believe could be correctable through TREM2 activation. In November 2021, the FDA cleared our IND for VGL101 in ALS at doses up to 20 mg/kg, with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second half of 2022. Assuming our Phase 1 trial progresses on our expected timeline, our FDA discussions proceed as currently planned, and we identify an acceptable dose as part of the Phase 1 trial, we believe we can initiate our interventional studies in ALS as early as the second half of 2022. We plan to leverage various target engagement and therapeutic biomarkers to evaluate the biology and clinical activity of VGL101. Target engagement biomarkers, such as IP-10, the soluble versions of the Colony Stimulating Factor 1 Receptor (sCSF1R) and TREM2 (sTREM2), are designed to assess VGL101's ability to bind to TREM2 and generate a biological result, such as increased or decreased levels of a protein specifically resulting from TREM2 activation. Such studies aim to establish proof of mechanism (PoM). We believe disease biomarkers, such as changes in the neurofilament light protein (NfL) levels in serum or cerebrospinal fluid, and magnetic resonance imaging (MRI) for white matter lesion changes, are potential indicators of therapeutic response and in human studies, may support demonstration of PoC. We also plan to submit a protocol to the FDA under our open IND to conduct a Phase 1b biomarker-based, PoM clinical trial with VGL101 in genetically defined AD patients with or without the relevant *TREM2* variants, expected to begin in the second half of 2022. We may seek to expand the development of VGL101 for use in additional rare leukoencephalopathies and leukodystrophies where microglia play an essential role, including cALD, for which we plan to submit an IND amendment to our open IND to conduct a Phase 2 clinical trial in the first half of 2023 following the completion of the VGL101 Phase 1 clinical trial in healthy volunteers. This class of diseases is also characterized by increased permeability of the blood brain barrier, which we expect will facilitate the passage of VGL101 from the bloodstream into the brain.

- **Develop a novel, orally-available, small molecule TREM2 agonist for the treatment of more common neurodegenerative diseases, beginning with genetically defined subpopulations of AD patients.** Peer reviewed literature suggests a strong genetic association between certain *TREM2* variants and the development and progression of AD. We believe our precision medicine approach will enable us to identify subpopulations of AD patients who are most likely to benefit from treatment with a small molecule TREM2 agonist. We plan to begin the work of selecting genetically defined subpopulations to evaluate in our small molecule program by studying microglial modulation with VGL101. After initiation of our first-in-human clinical trial of VGL101, we plan to propose to the FDA an amendment to the current protocol to include healthy volunteers with AD-linked *TREM2* variants. As mentioned above, in the second half of 2022, we also plan to conduct a Phase 1b biomarker-based, PoM clinical trial with VGL101 in genetically defined AD patients with or without the relevant *TREM2* variants. Data from these and other studies, including a Phase 1 healthy volunteer trial, will inform the selection of the patient population for a Phase 2 clinical trial with a small molecule candidate designed to evaluate efficacy and safety. In preclinical studies conducted to date, the small molecule compounds we are developing have demonstrated encouraging CNS penetration and physiochemical properties that we believe make them suitable for oral delivery. We believe that an orally-available small molecule therapeutic may have meaningful clinical and commercial advantages in large chronic indications, especially when treatment is administered in the outpatient setting. We expect to have a development candidate from our lead series selected by the first quarter of 2022, and, assuming successful completion of IND-enabling studies, initiate a first-in-human healthy volunteer trial.
- **Expand our modality-agnostic product pipeline to other microglial targets beyond TREM2.** Given the central role that microglia play in maintaining brain health, we plan to explore targets beyond TREM2 for the development of therapeutics that modulate microglial activity across multiple modalities for the treatment of additional neurodegenerative diseases. We plan to regularly evaluate opportunities to expand and diversify our pipeline either through internal discovery and development, or through strategic collaborations or alliances with academic organizations or pharmaceutical or biotechnology companies.
- **Engage the stakeholder community including patients, advocacy groups, and clinical leaders.** Support of the stakeholder community is an integral part of our mission to bring microglia-targeted therapeutics to patients with neurodegenerative diseases. Early and ongoing engagement increases our understanding of the patient journey, helps build disease awareness, and facilitates recruitment of patients and clinicians to participate in clinical trials. For example, we actively support the first and only ALSP patient organization, Sisters' Hope Foundation, and launched the world's first patient-facing ALSP informational website, to increase ALSP awareness, engage with and support patients, the clinical community, and other relevant stakeholders. Beyond developing an ALSP KOL network and forming our Patient and Caregiver Advisory Council (PCAC), we have also partnered with larger leukodystrophy and rare disease umbrella organizations, such as United Leukodystrophy Foundation, National Organization for Rare Diseases (NORD), Global Genes, and the Every Life Foundation.

Microglia and Their Role in CNS Health and Neurodegeneration

Microglia are the sentinel immune cells of the brain and play a critical role in maintaining CNS health, or homeostasis, and responding to damage caused by disease. In recent years, the scientific community's understanding of microglia's role in brain health and neurodegeneration has advanced markedly. A 2020 review in the journal *Science*, for example, highlighted microglia's "fundamental role" as "governors of neuronal function and homeostasis in the adult brain." In their homeostatic state, microglia monitor for potential damage. Microglia sense multiple types of signals in the brain, including those generated by infection, cell death and breakdown, and replacement of myelin (sheaths of protein and fat that insulate axon fibers that turn over as part of normal brain physiology). Homeostatic microglia transition to a DAM phenotype and then coordinate signal-specific downstream responses, such as potentiation of microglial survival and proliferation, activation of microglial phagocytosis (cellular debris removal by innate immune cells), removal of unneeded neural

connections (axonal pruning) to maintain synaptic health, and stimulation of microglial lysosomal function, and lipid and cholesterol metabolism.

Recent studies have shown that DAM possess neuroprotective disease-preventing effects. DAM are not associated with any specific primary cause of disease pathology or disease etiology, but rather display a protective phenotype that maintains the anti-inflammatory CNS environment and removes protein clumps and cellular debris that accumulate in the brains of patients with neurodegenerative diseases and during normal aging. Microglia maintain homeostasis in healthy areas of the brain by preventing accumulation of debris resulting from normal brain maintenance and thus preventing initiation of neuroinflammation and neuropathology. For example, in AD animal model studies, DAM congregate and form a protective barrier at sites of neuroinflammatory lesions and around neurotoxic plaques, which are aggregates of β -amyloid protein.

The essential role played by microglia in maintaining brain health is exemplified by diseases of the white matter, such as leukoencephalopathies and leukodystrophies. In these diseases, microglial dysfunction directly affects neuronal function and white matter integrity. White matter consists of bundles of axon fibers wrapped in myelin sheaths that project from neurons and transmit signals across the brain. The bundles of myelin sheaths appear white and together are called white matter. Debris from the maintenance and regeneration of myelin sheaths must be cleared away by DAM to prevent inflammation and subsequent neurodegeneration. Microglial dysfunction and the resulting build-up of inflammatory myelin debris in these diseases leads to destruction of the white matter and the breakdown of the blood brain barrier, which can allow disruptive infiltration of inflammatory cells that further drive disease progression. Therefore, we believe treatments that prevent long term microglial dysfunction could prevent failure of the blood brain barrier and the resulting devastating inflammation that leads to neurodegeneration.

In more common neurodegenerative diseases such as AD, evidence suggests that microglia dysfunction is present in genetically defined subpopulations. Similar to leukoencephalopathies and leukodystrophies, failure of microglia to remove debris, in this case protein clumps, is believed to lead to degeneration of vulnerable neuronal subtypes. Restoring microglial function could prevent the expansion of β -amyloid plaque and slow down the neurodegenerative process in these subpopulations.

Our initial focus on microglia and microglia-targeted therapeutics is based on research linking microglia to both rare and common neurodegenerative diseases that either result from genetic mutations or are associated with genetic variations. These conditions include leukoencephalopathies and leukodystrophies, a set of rare, mainly genetic disorders affecting neurons and white matter, such as ALSP, cALD, Krabbe, MLD, as well as genetic subpopulations of AD carrying variants affecting microglial function. Due to their multiple functions, microglia are also implicated in other CNS diseases, including AD, FTD, MS, PD, amyotrophic lateral sclerosis (ALS), and certain rare epilepsies.

Genomic analyses have shown that genetic mutations or variations that affect microglial physiology predispose individuals to neuroimmune dysfunction and neurodegeneration. As a result, the brain's immune function, orchestrated by microglia, deteriorates, and subsequently fails to carry out critical activities, which include:

- clearing pathological neurodegenerative protein aggregates, such as those that accumulate in AD, to prevent accumulation and subsequent neuroinflammation;
- providing metabolic and functional support to maintain healthy nerve cells;
- regulating connections between nerve cells;
- removing white matter debris to prevent inflammation; and
- maintaining blood brain barrier integrity and regulating neurovascular function.

As illustrated in Figure 1 below, diseases colored in green represent our current focus areas, while diseases colored in purple represent potential future therapeutic opportunities for modulating microglial function.

Figure 1: Neurodegenerative Diseases Linked to Microglial Function and U.S. Prevalence Estimates

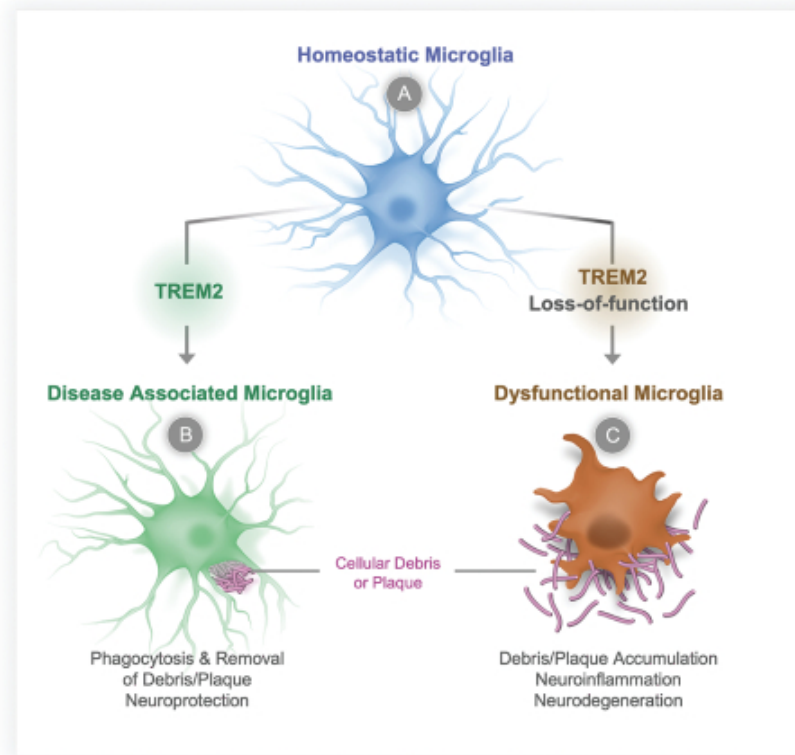


*Lennox-Gastaut & Dravet Syndromes (i.e., rare epilepsies).

TREM2: Our Initial Therapeutic Target

Our most advanced therapeutic programs are aimed at developing activators of TREM2, a membrane spanning receptor expressed specifically on microglia in the brain. TREM2 is essential for microglia's homeostatic maintenance functions and response to inflammatory CNS damage in various disease states. TREM2 acts like a sensor to detect cellular damage in the brain, such as from dead neurons and myelin debris (cellular debris), and protein clumps that form plaques. Once TREM2 encounters and binds to such damage, TREM2 mediates signals for the microglia to respond appropriately, for example, by transitioning to DAM, migrating to sites of damage, clearing away debris through phagocytosis, and acting as a barrier to prevent further damage (Figure 2). In preclinical studies across multiple neurodegenerative conditions, it has been shown that the transition from homeostatic microglia to fully activated DAM requires activation of the TREM2 receptor.

Figure 2: TREM2 Receptor Activation is Required for Homeostatic Microglia to Transition to DAM

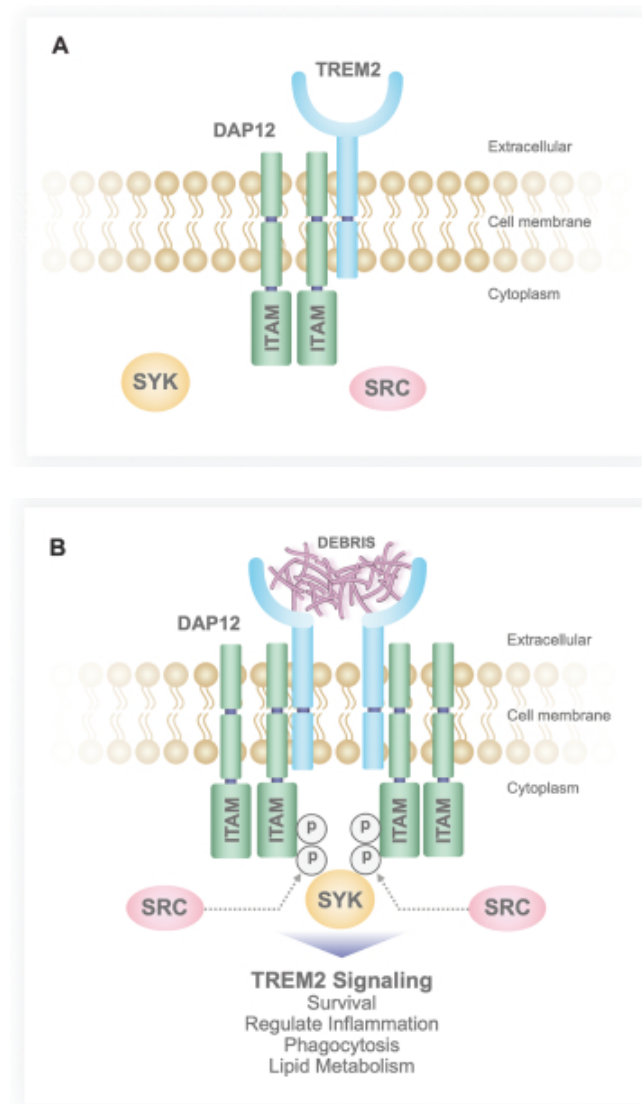


- A.** Homeostatic microglia sense debris. **B.** Microglia transitions to DAM through binding of cellular debris to TREM2, leading to debris removal. **C.** TREM2 loss-of-function results in dysfunctional microglia, unable to transition to DAM, leading to accumulation of cellular debris, neuroinflammation, and subsequent neurodegeneration.

TREM2's protective role in neurodegenerative disease was discovered through GWAS. This finding was confirmed and extended through transgenic animal studies and single cell RNA sequencing analyses. TREM2 signals through an associated protein complex, which triggers a cascade of biochemical changes that maintain microglial homeostasis and promote microglial migration to sites of injury, activate phagocytosis, and promote cell survival and proliferation.

Figure 3A below shows the TREM2 receptor and the key components of the associated protein complex, including a membrane protein called DNAX-activating protein of 12 kilodaltons (DAP12), which is associated with TREM2, and consists of an intracellular region, called ITAM, and intracellular proteins called SRC and SYK. As shown in Figure 3B, when adjacent TREM2 receptors recognize and bind to damage-associated materials, such as cell debris, the TREM2 receptors cluster. This triggers the phosphorylation, defined as a molecular modification involving addition of a phosphate group, of DAP12 at its ITAM region by SRC. Each phosphorylated ITAM region then binds to SYK, which relays the receptor signals within the cell. SYK also becomes phosphorylated after binding to relay the signal for initiating biochemical changes in the cell to promote microglial survival, proliferation, migration, and phagocytosis, and regulate inflammation and lipid metabolism.

Figure 3: TREM2 is an Environmental Sensor, Which Binds to Damage- or Infection-associated Materials, such as Cell Debris, Triggering its Activation



Multiple clinical trials have shown that TREM2 deficiency is a driver of neurodegeneration, and we believe such studies provide a compelling rationale for therapeutically activating TREM2 signaling to treat neurodegenerative diseases. Loss-of-function mutations of TREM2, such as those associated with AD and other neurodegenerative diseases, disrupt signaling through reduced binding to brain debris and reduced TREM2 levels at the cell surface. The following findings further support the link between TREM2 loss-of-function and disease:

- The importance of TREM2 in the CNS and its involvement in microglial dysfunction comes directly from a devastating human genetic disease called Nasu-Hakola disease (NHD). NHD is an autosomal recessive disorder, caused by a defect in two gene copies, that renders the receptor non-functional due

to *TREM2* or *DAP12* mutations. Clinically, NHD is characterized by a rapidly progressive and fatal adult-onset leukodystrophy with a predominantly cognitive phenotype directly caused by microglial dysfunction.

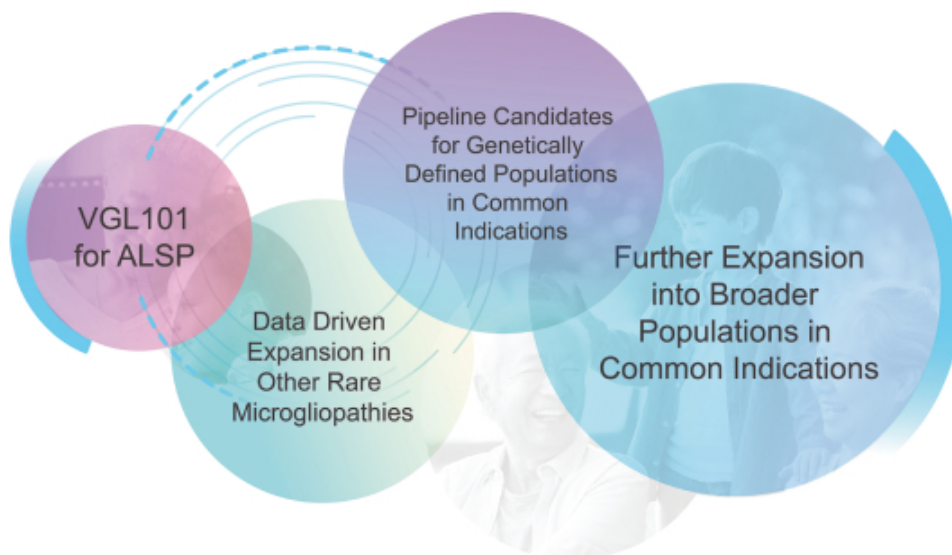
- *TREM2* loss-of-function variants are associated with several neurodegenerative diseases, FTD, ALS, and AD. For example, GWAS have shown that a specific mutation in a *TREM2* variant (R47H) has one of the strongest associations with the development of AD, second in magnitude only to that associated with the apolipoprotein E4 (*ApoE4*) genotype.
- Functionally, *TREM2* mutations drive disease pathology in multiple animal studies, such as studies for AD, stroke, MS, and other white matter diseases. For example, in an AD mouse study, microglial inactivation via *TREM2* deletion enhanced the spreading of both pathological β -amyloid and tau proteins.

In our preclinical studies to date, we have not observed any adverse effects resulting from *TREM2* agonism. Data in animal studies for AD and other neurodegenerative diseases suggest that chronic treatment with a *TREM2* agonist has the potential to ameliorate AD pathology. To our knowledge, no association has been established between gain-of-function mutations for *TREM2* and any disease.

Our Precision Medicine Approach to Development

We are pursuing a precision medicine approach to developing a broad range of therapeutics for neurodegenerative diseases. We believe that each of the drugs in our pipeline can be developed for multiple neurodegenerative diseases, some of which have very large patient populations. Our development strategy, as shown in Figure 4 below, is to begin with rare, genetically defined diseases for which microglial dysfunction is a key driver of disease pathology and to use findings from these efforts to inform expansion into larger and more common neurodegenerative indications. We believe this iterative, sequential approach is a key differentiator which will help reduce downstream translational risk and potentially allow us to generate clinical PoC efficiently and leverage our initial development programs as well as research by others in pursuing additional neurodegenerative disease opportunities. We also believe we are differentiated by developing both large molecule (i.e., injectable) antibodies as well as small molecule (i.e., orally available) drugs.

Figure 4: Our Development Strategy



[Table of Contents](#)

We are executing on this approach with our lead pipeline candidate, VGL101, which is initially being developed for the treatment of ALSP. ALSP has strong genetic, mechanistic, and biochemical associations with microglial dysfunction. The understanding of the genetic defect, the molecular pathway deficit, the potential for TREM2 agonism to mitigate the deficit, and the availability of both target engagement and disease biomarkers, serve to increase our confidence in our efforts to rapidly achieve clinical PoC for VGL101 for this disease. We believe the significant unmet need and lack of approved therapies in ALSP has the potential to enable a more efficient clinical development path to PoC and regulatory approval, if these trials are successful.

We plan to leverage our work in ALSP to target other rare leukoencephalopathies and leukodystrophies, such as cALD. We also plan to evaluate VGL101 in certain genetically defined patient segments of more common neurodegenerative diseases for which TREM2 and/or microglial dysfunction is believed to be a key driver of disease pathology, such as AD.

We are developing an orally-available small molecule that we believe may have potential clinical and commercial advantages, including ease of administration, improved treatment compliance, and use in outpatient settings. We believe our small molecule TREM2 agonist could be particularly impactful for treating diseases with larger patient populations.

We expect to apply learnings from our VGL101 program to inform development of our small molecule TREM2 agonist program in larger and more common neurodegenerative indications. For example, we expect the VGL101 program will provide insights into the mechanism of action and pharmacology of TREM2 agonism, relevant biomarkers as well as help us identify the appropriate patient populations for TREM2 agonist therapies.

Our Product Development Programs

We currently have two programs aimed at developing microglia-targeted TREM2 agonists for the treatment of neurodegenerative diseases:

- VGL101: A fully human monoclonal antibody, or mAb, targeting human TREM2 for the treatment of rare microgliopathies. We are initially developing VGL101 for the treatment of patients with ALSP, a rare, genetically defined, and fatal neurodegenerative disease caused by microglial dysfunction. In multiple preclinical *in vitro* and *in vivo* studies, VGL101 specifically and potently activated TREM2, thereby targeting cells expressing human TREM2 to initiate the cascade of downstream signaling that modulates the neuroprotective and homeostatic functions of microglia. In September 2021, we began a non-interventional natural history study of ALSP patients. In November 2021, the FDA cleared our IND for VGL101 in ALSP at doses up to 20 mg/kg, with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second half of 2022. Assuming our Phase 1 trial progresses on our expected timeline, our FDA discussions proceed as currently planned, and we identify an acceptable dose as part of the Phase 1 trial, we believe we can initiate our interventional studies in ALSP as early as the second half of 2022. We have also identified a second rare microgliopathy, cALD, for which we plan to submit an IND amendment to our open IND to conduct a Phase 2 clinical trial in the first half of 2023, following the completion of the VGL101 Phase 1 clinical trial in healthy volunteers. We also plan to submit a protocol amendment to the FDA under our open IND to conduct a Phase 1b biomarker-based, proof-of-mechanism clinical trial of VGL101, expected to begin in the second half of 2022, in genetically defined AD patients with or without the relevant *TREM2* variants to inform subsequent clinical trials with our small molecule agonist.
- A novel, orally available, small molecule TREM2 agonist for common neurodegenerative diseases that are linked to microglial dysfunction. We are initially developing this program for the treatment of genetically defined subpopulations of AD patients. Compounds in our lead series have been observed to be highly CNS penetrant after oral dosing, and similar to VGL101, are specific, potent activators of TREM2. We expect to have a development candidate from our lead series selected by the first quarter of 2022, and, following IND-enabling studies, initiate a first-in-human healthy volunteer trial. In

addition, we have ongoing screening efforts that have resulted in the discovery of a second series that is built around a different chemical core structure than the lead series. Our second series is currently in the early lead optimization stage.

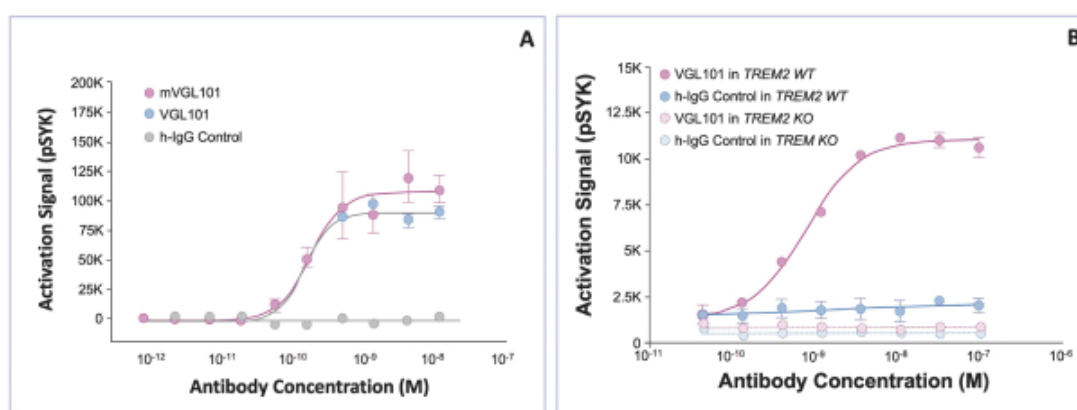
VGL101

Our lead candidate, VGL101, is a fully human mAb targeting human TREM2 that was designed to minimize unwanted immune responses and engineered to prevent mediating cellular toxicity.

In multiple preclinical *in vitro* and *in vivo* studies, VGL101 has demonstrated target engagement with TREM2. VGL101 specifically and potently activated TREM2, thereby targeting cells expressing human TREM2 to initiate the cascade of downstream signaling that modulates the neuroprotective and homeostatic functions of microglia.

In *in vitro* studies in human embryonic kidney (HEK) cells engineered with human TREM2 and its receptor partner, DAP12, VGL101 activated TREM2, as measured by phosphorylation of SYK (pSYK) in a dose dependent manner at very low concentrations (i.e., sub-nanomolar levels, below $1 \times 10^{-9} \text{M}$) (Figure 5A). Additionally, mVGL101, an engineered version of VGL101 that minimizes immunogenicity in mice, showed comparable TREM2 agonist activity as VGL101. VGL101 also activated wild-type TREM2 (“TREM2 WT”) in human microglia cultures and did not demonstrate any activity in microglia without TREM2 (“TREM2 KO”; Figure 5B).

Figure 5: VGL101 Activated TREM2 in *In Vitro* Studies of HEK Cells and Human Microglia

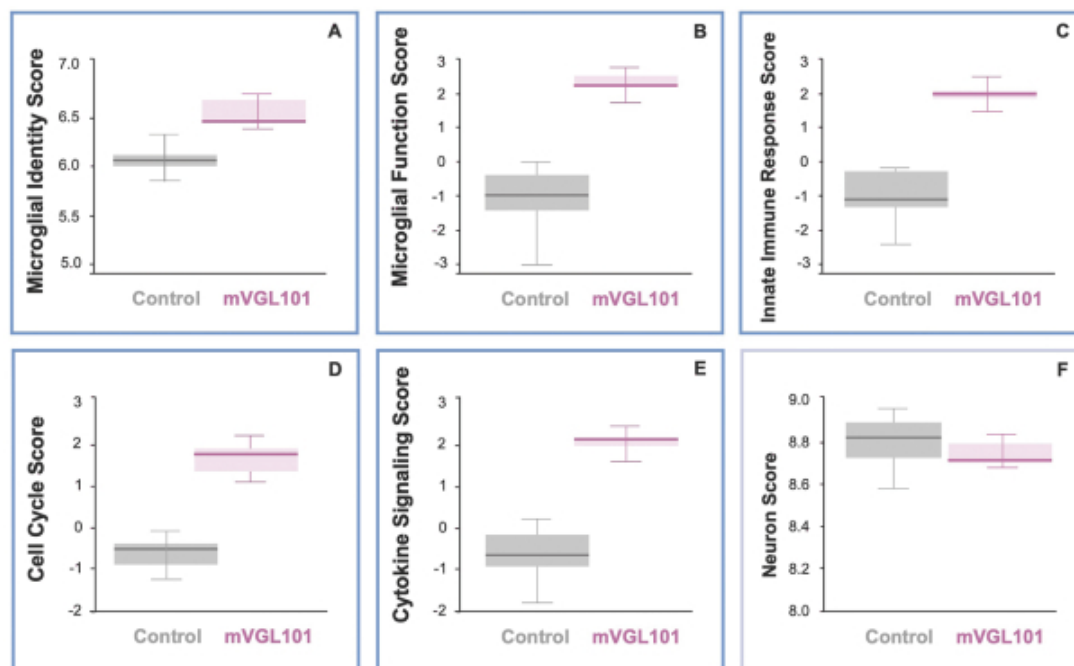


Activation Signal (pSYK): measurement of phosphorylation level of SYK; VGL101 Concentration: molar concentration (M) of VGL101 on a logarithmic scale – $1 \times 10^{-12} \text{M}$, $1 \times 10^{-11} \text{M}$, $1 \times 10^{-10} \text{M}$, $1 \times 10^{-9} \text{M}$, $1 \times 10^{-8} \text{M}$, $1 \times 10^{-7} \text{M}$, $1 \times 10^{-6} \text{M}$; h-IgG Control: immunoglobulin G acting as negative control; TREM2 WT; wild-type TREM2 gene; TREM2 KO; TREM2 gene removed or knocked out

To validate target engagement, we conducted studies through the genetic engineering of mice in which the human TREM2 gene was “knocked in” to replace the mouse Trem2 gene homolog. Figure 6 below shows that a systemically administered mVGL101 dose increased brain expression of genes associated with microglial identity (homeostatic genes; Figure 6A), microglial function (Figure 6B), innate immune response (neuroprotection genes, Figure 6C), cell cycle (proliferation genes; Figure 6D), and cytokine signaling (neuroprotection genes; Figure 6E) without affecting the gene expression in other cell types found in the brain, specifically neurons (Figure 6F) and astrocytes. Therefore, following systemic administration, mVGL101 has

been demonstrated to reach the brain, engage human TREM2, and activate microglia to increase gene programs that define normal functioning states related to damage surveillance, response to damage sensing, and neuroprotection.

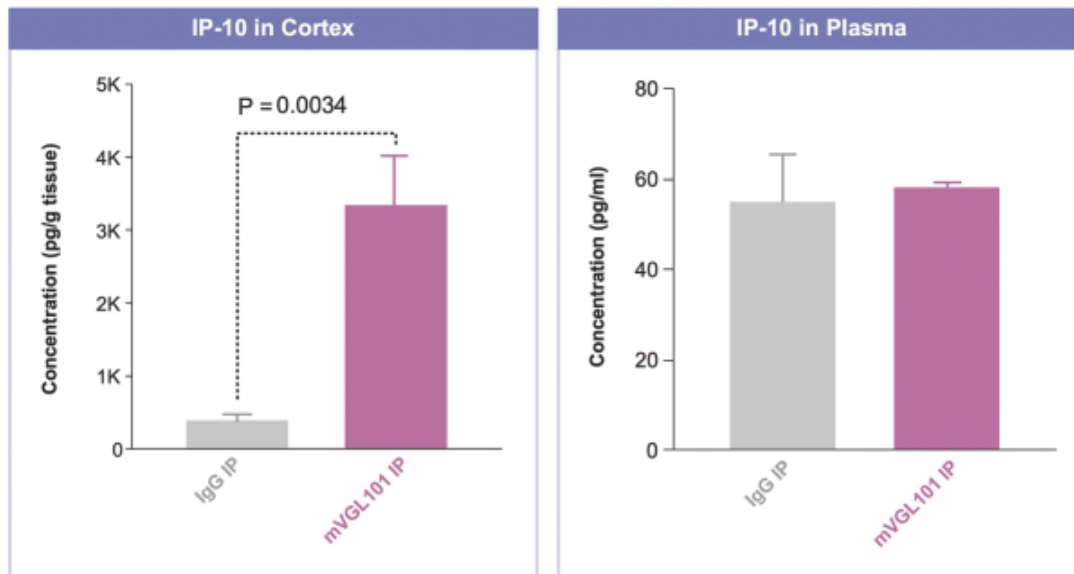
Figure 6: A Single Dose of mVGL101 Increased the Expression of Genes Associated with Microglial Identity, Microglial Function, Innate Immune Response Cell Cycle and Cytokine Signaling Without Affecting the Gene Expression in Neurons



Y-axes—reflect the level of gene expression changes based on analyses comparing total brain RNA (gene transcripts) isolated from negative control (antibody without TREM2 binding) and mVGL101-treated mice: A: “Microglial Identity Score”—gene expression associated with microglial identity; B: “Microglial Function Score”—gene expression associated with microglial activation; C: “Innate Immune Response Score”—gene expression associated with innate immunity and neuroprotection; D: “Cell Cycle Score”— gene expression associated with cell cycle and proliferation; E: “Cytokine Signaling Score” —gene expression associated with cytokine signaling and neuroprotection; F: “Neuron Score” – gene expression associated with neuronal identity.

In a separate set of experiments designed to confirm target engagement in the CNS, the intraperitoneal (IP) administration of mVGL101 in mice resulted in increased levels in the brain of IP-10, a cytokine secreted only by microglia following TREM2 activation. As shown in Figure 7, mVGL101 did not increase IP-10 levels in plasma, further confirming that target engagement was localized to the CNS alone. We believe this finding suggests that VGL101 administration is unlikely to result in undesirable, off-target effects outside of the brain.

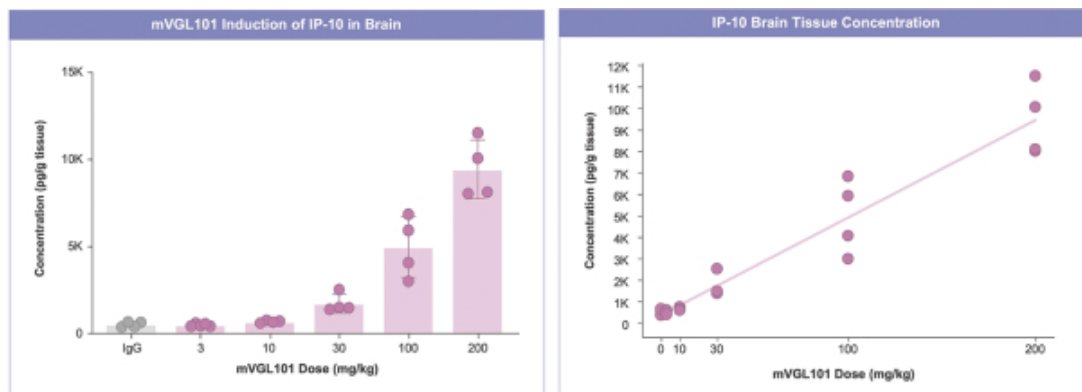
Figure 7: mVGL101 Productively Activated Microglia in Human *TREM2* Knock-in Mice without Peripheral Effects



Concentration (pg/g tissue): concentration of IP-10 protein (pg) per gram of cortical homogenate; Concentration (pg/ml): concentration of IP-10 protein (pg) per milliliter of plasma; IgG IP—intraperitoneal administration of immunoglobulin G as a negative control; mVGL101 IP—intraperitoneal administration of mVGL101 in a single dose of 100 mg/kg. The IP-10 level for mVGL101 in the Cortex group was determined to be statistically different than that for IgG control with a P value < 0.01.

In addition, we have conducted single ascending dose studies in mice with mVGL101. These studies demonstrated that the administration of mVGL101 produced dose-dependent increases of IP-10 in the brain.

Figure 8: mVGL101 Dose-dependent CNS Induction of IP-10 (left) and Linearity of mVGL101 Dose-dependent CNS Induction of IP-10 (right)



Concentration (pg/g tissue): concentration of IP-10 (pg) per gram of cortical homogenate.

The ability of a therapeutic to cross the blood-brain barrier to reach its target within the brain is critical to neurodegenerative disease drug development and can be a challenge for large molecules such as antibodies. In non-human primates (NHP), we demonstrated that VGL101 was able to penetrate the blood brain barrier at levels in line with those typically observed in prior NHP studies of currently marketed antibody drugs. In the same study, we further demonstrated TREM2 target engagement, showing an increase in levels of sCSF1R over baseline in the cerebrospinal fluid (CSF). This increase in sCSF1R persisted in the CSF for more than six days (150 hours), as shown in Figure 9. We believe that this data, taken together with other preclinical data, suggests that VGL101 can achieve therapeutically relevant concentrations in the brain.

In addition, leukodystrophies, and leukoencephalopathies such as ALSP, are characterized by blood brain barrier disruption, which increases its permeability in areas where the disease is active. We believe such disruption has the potential to facilitate entry of VGL101 from the bloodstream into the brain to targeted areas of active neuro-inflammatory lesions in these diseases.

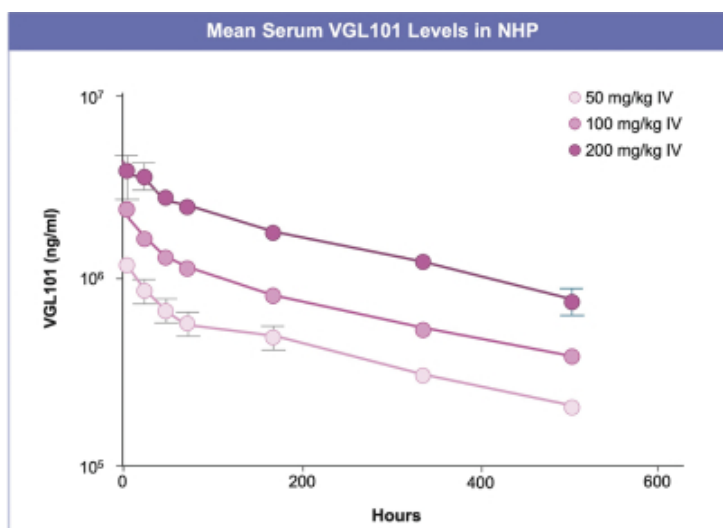
Figure 9: Increase in sCSF1R (left) and Sustainable Increase (right) in the CSF Following VGL101 Administration in NHP



Percentage Change from Baseline: change in levels of sCSF1R in the CSF expressed as a percentage of baseline levels.

The pharmacokinetics of VGL101 have been characterized in NHP (Figure 10). Based on these data, the predicted serum half-life in humans is 21 days, which we believe supports monthly intravenous (IV) dosing in patients. In this study, VGL101 was administered intravenously at 3 dose levels, 50 mg/kg, 100 mg/kg, and 200 mg/kg. Blood samples were obtained from each NHP at multiple timepoints after VGL101 administration to monitor the change in systemic VGL101 levels and calculate a half-life for the drug candidate. The data from these experiments will inform the projected dose level for human clinical trials.

Figure 10: The Pharmacokinetics of VGL101 in NHP Show Predicted Serum Half-life in Humans is 21 Days



The safety profile of VGL101 is currently being assessed in a six-month repeat-dose toxicology study in NHP. An interim report, including data from one month of dosing, was included in our open IND. Data from this interim report have demonstrated that administration of VGL101 once weekly via IV injection to cynomolgus monkeys at dose levels of 50 mg/kg, 100 mg/kg, and 200 mg/kg was well tolerated through the 29-day interim evaluation. Based on these results, the no-observed-adverse-effect level for the interim time point was considered to be 200 mg/kg/day.

Our First VGL101 Indication—ALSP

ALSP is a rare, inherited, autosomal dominant neurological disease with high penetrance. Because ALSP is autosomal dominant, the disease requires a mutation in only one of two gene copies in order to develop. It is caused by a mutation of the *CSF1R* gene and affects approximately 10,000 people in the U.S., with an estimated incidence of about 1,000 to 2,000 new cases annually. ALSP has been diagnosed in countries around the world, with major clusters in North America (U.S. and Canada), Central and Northern Europe, and Asia. ALSP was only recently recognized as a distinct disease in 2012. Initial symptoms of the disease, at times, resemble other neurodegenerative disorders, such as FTD, leading to misdiagnoses. Therefore, we believe the published prevalence figures may underrepresent the ALSP patient population. With the recent availability of genetic testing for *CSF1R* mutations and disease awareness-building efforts by us and patient advocacy groups, we expect the number of diagnoses to increase.

The disease generally presents in adults in their forties, is diagnosed through genetic testing for *CSF1R* mutations and established clinical/radiologic criteria, and is characterized by cognitive dysfunction, neuropsychiatric symptoms, and motor impairment. These devastating symptoms typically exhibit rapid progression and those affected have an average life expectancy of approximately six to seven years following symptom onset.

To our knowledge, there are no approved products for ALSP, and beyond VGL101, there are none in clinical development. Academic investigators have tried hematopoietic stem cell transplantation in a small number of patients. In a published report on seven patients followed for a median period of 11 months, although the investigators reported some improvements, all patients experienced some level of disease progression as well

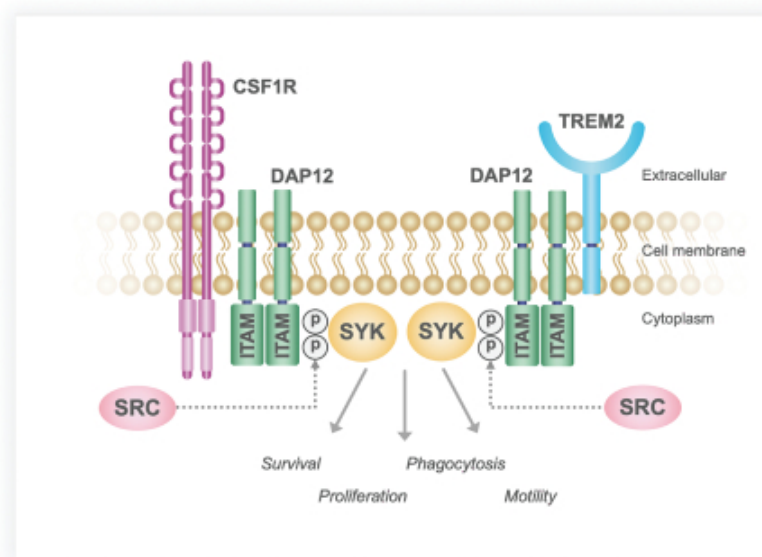
as MRI lesion progression with three patients experiencing graft versus host disease and one death in addition to other side effects. Off-label use of symptomatic treatments (e.g. anti-Parkinsonian drugs) appear to provide minimal benefit to patients with ALSP.

ALSP is caused by loss-of-function mutations in the *CSF1R* gene, which lead to microglial dysfunction. *CSF1R*^{+/-} microglia, which lack one copy of functional or wild-type *CSF1R*, fail to perform homeostatic functions, such as phagocytosis and removal of myelin debris, as well as maintenance of synaptic health by axonal pruning. This microglial dysfunction leads to loss of oligodendrocytes, as well as axonal damage, manifesting as demyelination, axonal spheroids, and a devastating neurodegenerative and neuroinflammatory phenotype. ALSP patients experience both microglial loss and dysfunction in the white matter regions of the brain. As disease progression accelerates, the blood brain barrier function becomes compromised and peripheral immune cells infiltrate into the brain, contributing to the pro-inflammatory pathophysiology of ALSP.

Treatment Rationale for VGL101

We believe that VGL101 has the potential to be a treatment for ALSP because *CSF1R* and *TREM2* share a common downstream signaling pathway. As shown in Figure 11 below, both cell surface receptors transmit their biological effects, including cell survival and proliferation signals, through the same signaling partner, DAP12/SYK.

Figure 11: CSF1R and TREM2 Share a Common Signaling Pathway

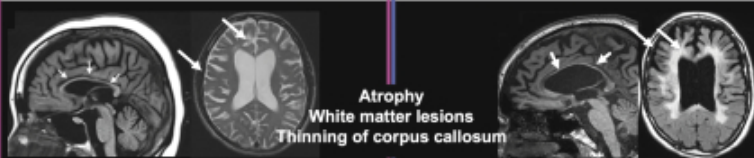


TREM2's signaling for phagocytosis and cell motility is also transmitted through DAP12/SYK. The upstream biology of *CSF1R* and *TREM2* is distinct, with *CSF1R* responding to either of two growth factors, IL34 and CSF1, for cell survival, proliferation, and differentiation, while *TREM2* is activated by a broad array of damage-associated cellular debris, as part of its sensor function.

VGL101 is designed to increase signaling through DAP12/SYK to compensate for *CSF1R* loss-of-function by mitigating microglial dysfunction. Human genetics have demonstrated the impact of deficient signaling through *TREM2* or DAP12/SYK in the rare, fatal genetic disease, NHD, which is caused by mutations in *TREM2*

or *DAP12*, resulting in the complete loss of their signaling function. As seen in Figure 12 below, the disease presentation, imaging findings, and brain pathology of ALSP and NHD are similar, highlighting that converging, dysfunctional biochemical pathways produce similar pathobiology. For example, both NHD and ALSP are fatal, rapidly progressing disorders that produce FTD-like symptoms that first appear in the thirties in the case of NHD, and forties for ALSP. Both are characterized by chronic loss of myelin and loss of axons, nerve fibers that transmit electrical signals away from nerve cells and which are the primary constituents of white matter. The white matter brain lesions resulting from both diseases have a similar distribution as shown by the arrows in Figure 12.

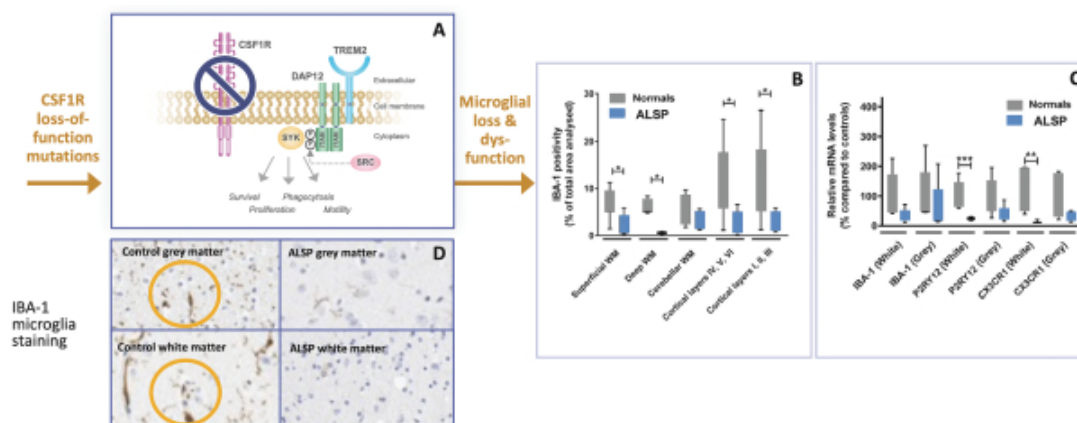
Figure 12: *TREM2* and *CSF1R* Mutations Result in Diseases with Similar Pathology

	NHD	ALSP
Similar Disease Presentation	FTD-like presentation in the 30s Dementia and death by age 50 years Progression through Stages I-IV	FTD-like phenotype in the 40s Average time to death 6 to 7 years Progression through Stages I-IV
Similar Imaging Findings	 <p>Atrophy White matter lesions Thinning of corpus callosum</p>	
Similar Brain Pathology	<p>Chronic demyelination Axonal loss Sparing of subcortical U-fibers (nerves connecting adjacent areas of brain) Involvement of the pyramidal tracts (nerve fibers extending from brain cortex to spinal cord or brain stem) Dilated axons</p>	
Genetic Driver of Disease	<i>TREM2</i> \pm or <i>DAP12</i> \pm	<i>CSF1R</i> \pm
Signaling Convergence	<p>DAP12– Essential for <i>CSF1R</i> & <i>TREM2</i> Signaling</p>	

Bianchin et al, Nat Rev Neurol. 2010. Coomans, C., et al. Acta Neurologica Belgica. 2018, Konno et al, Neurology 2018. Oyanagi et al, Brain Pathol. 2017

Mutations in *CSF1R* that result in the development of ALSP cause the loss of proper receptor signaling, reducing microglia cell numbers and impairing their activity in several of the affected white matter and cortical regions. As seen in Figure 13B below, brain tissue from ALSP patients showed a reduction in the number of microglia as compared with normal tissue, as measured by a microglial marker, IBA-1. Brain tissue from ALSP patients also showed decreased levels of microglial-specific RNA transcripts compared with healthy tissue, as evidenced by the downregulation of key microglial homeostatic genes such as *IBA-1*, *P2RY12* and *CX3CR1* (Figure 13C). Several academic groups have demonstrated the loss of microglia (decreased staining for IBA-1 positive cells) in the grey and white matter regions of ALSP brain tissue, implicating ALSP as a primary microgliopathy (Figure 13D). Additionally, microglia exhibiting an elongated shape, which are indicative of a DAM phenotype, are absent in the brain tissue of ALSP patients.

Figure 13: CSF1R Mutations Lead to Microglial Loss and Dysfunction in ALSP

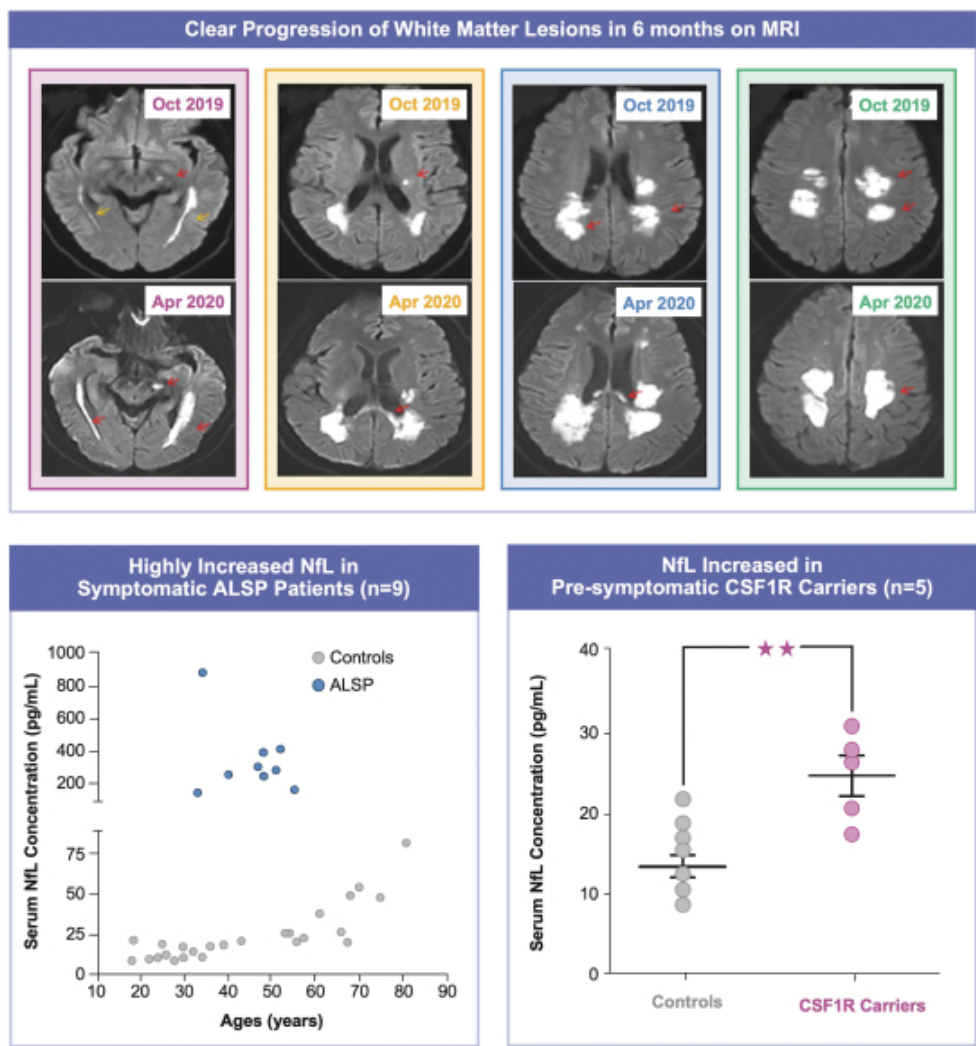


A: CSF1R receptor signaling deficient due to loss-of-function mutations. B: y-axis (“IBA-1 positivity (% of total area analyzed)”) - quantification of levels of IBA-1 stained cells (indicative of microglia); x-axis: various layers of brain cortex, WM- white matter. C: y-axis (“Relative mRNA levels (% compared to controls)”) - quantification of expression levels of various genes reflected along the x-axis; x-axis: “White”- brain white matter region, “Grey”- brain grey matter region. D: immunohistochemical staining of ALSP and control brain tissues: brown staining represents IBA-1 positive cells (microglia). B, C and D are adapted from Kempthorne et al. *Acta Neuropathologica*. 2020.

As seen below in Figure 14, we believe that there are quantifiable, disease-associated biomarkers which correlate with disease progression and could be used to detect treatment effects in ALSP clinical trials. These include MRI of brain lesions, which appear to correlate with disease progression, and fluid biomarkers such as NfL, an axonal protein, for which detection in the blood or CSF is quantitatively indicative of white matter degeneration. Deep phenotype maps based on digital sensing technologies of ALSP patients could capture therapeutic responsiveness to any experimental treatment paradigms in the future. We believe the change in NfL levels from baseline is a potential therapeutic biomarker. NfL protein levels in the CSF have been shown to be more than 30-fold higher in ALSP patients than in age-matched controls and approximately 14-fold higher in serum. Serum NfL protein levels have been reported to be significantly higher, approximately two-fold, in young pre-symptomatic CSF1R mutation carriers than age-matched healthy subjects. To our knowledge, the magnitude of NfL increase in the serum and CSF of ALSP patients is higher than in any other neurodegenerative disease described to date. We believe that these robust NfL levels will make them readily quantifiable with lower variability than has been observed in other clinical programs, with changes from baseline levels indicative of a therapeutic response. By contrast, patients with AD, ALS, FTD, MS, Lewy body dementia, and progressive supranuclear palsy have been shown to have CSF NfL levels approximately 2.3-fold, 7.2-fold, 3-fold, 2.1-fold, 2.8-fold, and 3.5-fold higher than healthy controls, respectively.

We believe that the availability of such biomarkers and their relation to disease progression will provide us with early indicators of VGL101’s therapeutic response and in human studies may support demonstration of PoC. Along with the high unmet need in the disease, we believe the availability of these quantifiable biomarkers make ALSP an attractive initial indication for VGL101.

Figure 14: ALSP Has Disease Biomarkers That Can Be Used in Clinical Development Including MRI (Top Panel) and NFL (Bottom Panel)

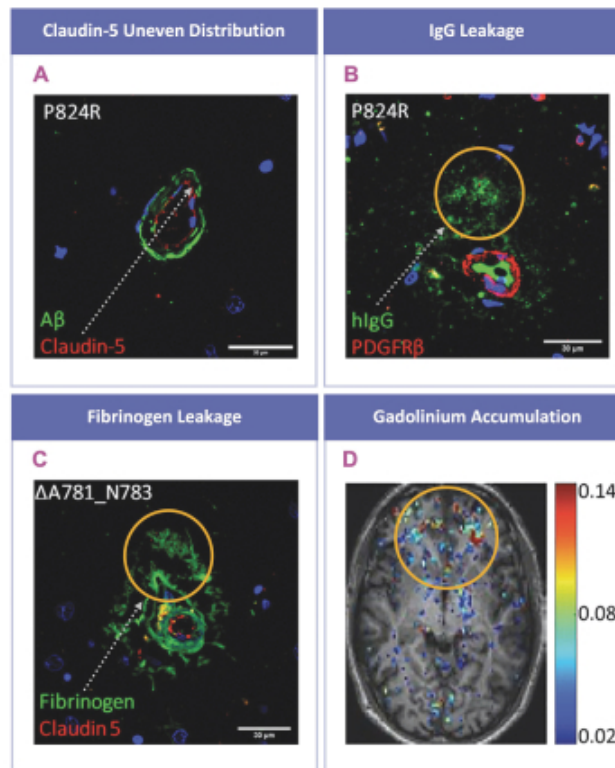


Oyanagi et al, *Brain Pathol.* 2017; Lakshmanan et al, *Neurol Genet.* 2017. Hayer et al, *Neurology* 2018. Kang et al. *Radiol Case Rpts* 2019; Huang et al. *BMC Neurology* 2021.

The compromised blood-brain barrier (BBB) of patients with ALSP is observable on histopathology and MRI. BBB disruption in human ALSP brain tissue is evidenced in histopathology images showing uneven distribution of claudin-5 (Figure 15A, punctate red staining), indicating the breakdown of tight junction function at the BBB. The compromised BBB results in leakage of large biological molecules such as IgG (Figure 15B, diffused green staining) and fibrinogen (Figure 15C, diffused green staining) from the bloodstream into the brain tissue (areas outside the circle-like structures near the center of the images) that do not typically occur in healthy individuals. The overall effects of a disrupted BBB are evidenced by MRI showing gadolinium accumulation in

the frontal cortex regions of ALSP patients (Figure 15D, different colored signals indicating levels of accumulation), which coincides with the regions of white matter degeneration during disease progression. We believe this increased BBB permeability in ALSP has the potential to increase brain exposure of large biological molecules such as VGL101 in the areas of active inflammation, which may restore microglial function and BBB integrity in these areas through TREM2 agonism.

Figure 15: Loss of CSF1R Activity in ALSP Reduced Blood Brain Barrier Integrity and Led to Increased Large Biological Molecule Permeability



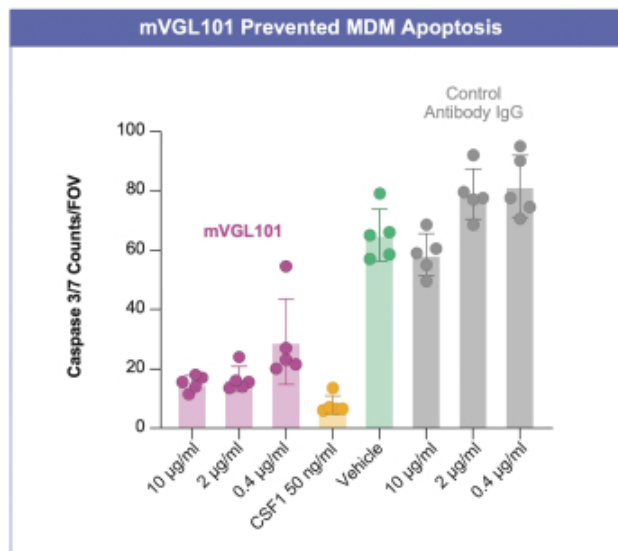
A – C: Immunohistochemical staining of ALSP post-mortem brain tissue; P824R and DA781_N783 are loss-of-function mutations in CSF1R. A: “A β ”- amyloid-beta staining (green); “Claudin-5”- claudin-5 staining (red); uneven punctate staining pattern denoted by arrow indicates breakdown of tight junction function (tight junctions are multiprotein complexes of the BBB whose function is to seal the bloodstream from the brain and prevent leakage of proteins and other soluble material into the brain). B: “hIgG”- human immunoglobulin G staining (green); leakage of hIgG into brain tissue indicated by diffused staining pattern and denoted by arrow and circle; “PDGFR β ”- platelet-derived growth factor receptor beta staining (red). C: “Fibrinogen”- fibrinogen staining (green); leakage of fibrinogen into brain tissue indicated by diffused staining pattern and denoted by arrow and circle; “Claudin-5”- claudin-5 staining (red); uneven punctate staining pattern indicates breakdown of tight junction function. D: T1-weighted dynamic contrast-enhanced MRI of an ALSP patient with the DA781_N783 CSF1R variant; colormetric scale indicates levels of gadolinium accumulation as an indicator of BBB permeability; grey lines in lower right corner of A, B and C represent the scale of the figure – length of line is 30 μ M. Delaney et al. *EMBO Mol Med* 2021.

We have demonstrated PoM in *in vitro* studies that model CSF1R loss-of-function in ALS. For these studies, we used a system for differentiation of macrophages, which are innate immune cells outside of the brain that have similar functions as microglia. We established human monocyte-derived macrophage (MDM) culture systems using monocytes, immature pre-macrophage cells isolated from human blood, that are dependent on the growth factor CSF1 for survival and differentiation into more mature cells. In the first study illustrated in Figures 16A and 16B below, we observed that VGL101 rescued cultured differentiating monocytes cells from depletion of CSF1.

In this study, monocytes were co-cultured with CSF1 to induce differentiation into macrophages via DAP12/SYK signaling. When CSF1 is removed from the culture, the cells die by a process called apoptosis or programmed cell death, mimicking CSF1R loss-of-function. When mVGL101 was used to mediate DAP12/SYK signaling through TREM2 activation, and thus compensate for the missing CSF1, the cells survived. Specifically, as shown in Figure 16A, the levels of apoptosis markers (Caspase 3/7) in cultures treated with mVGL101 are similar to those of the CSF1-treated culture, whereas the levels for cultures treated with vehicle and control antibody are markedly higher.

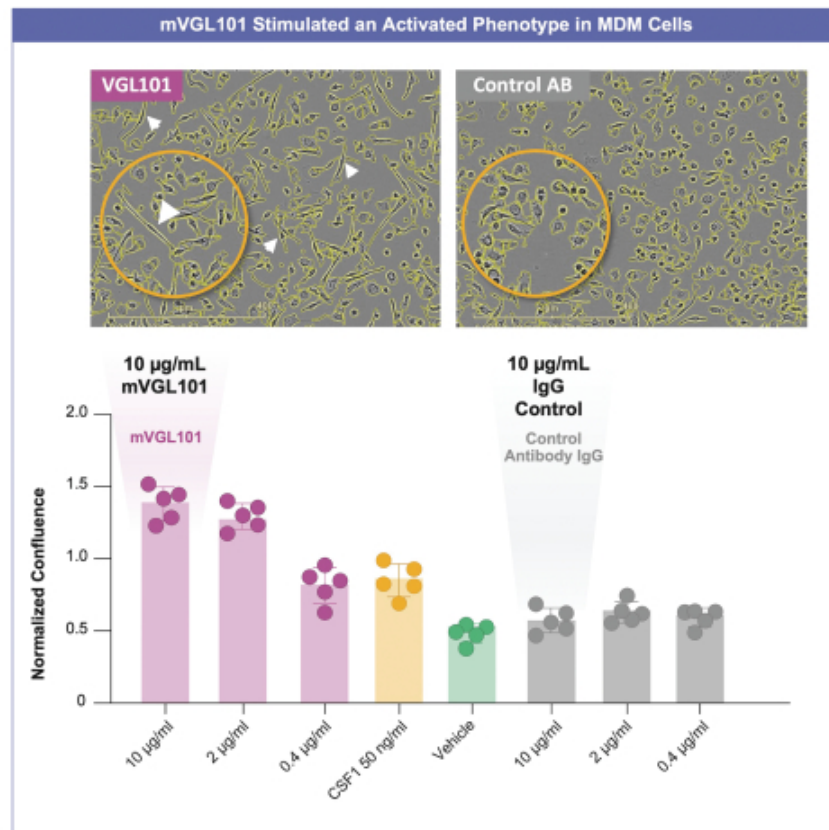
mVGL101 also enabled the transition to the MDM activated phenotype, as demonstrated both by the increased confluence, a measure of cell shape changes based on the area occupied by cells within a field of view, and by the motility of mVGL101-treated cells as compared to those treated with the control antibody, as shown in the Figure 16B below. The macrophage differentiation transition induced by mVGL101 was demonstrated by monitoring cell shape and cell motility changes using microscopic video image captures (Figure 16B) and video, respectively. These images show that the mVGL101-treated cultures contained numerous elongated cells that are transitioning to a more mature state (characterized by elongated cell processes), while the negative control treated cells remained spheroid and without elongated processes. The videos of these cultures over 48 hours showed that mVGL101 treated cultures contained numerous motile cells that migrate across the field of view indicating TREM2-mediated activation. No activation was observed in the control antibody cultures.

Figure 16A: TREM2 Agonism Mediated by mVGL101 Compensated for CSF1R Loss-of-Signaling and Prevented Apoptosis of MDM, Providing *In Vitro* PoM for CSF1R Deficiency in ALS



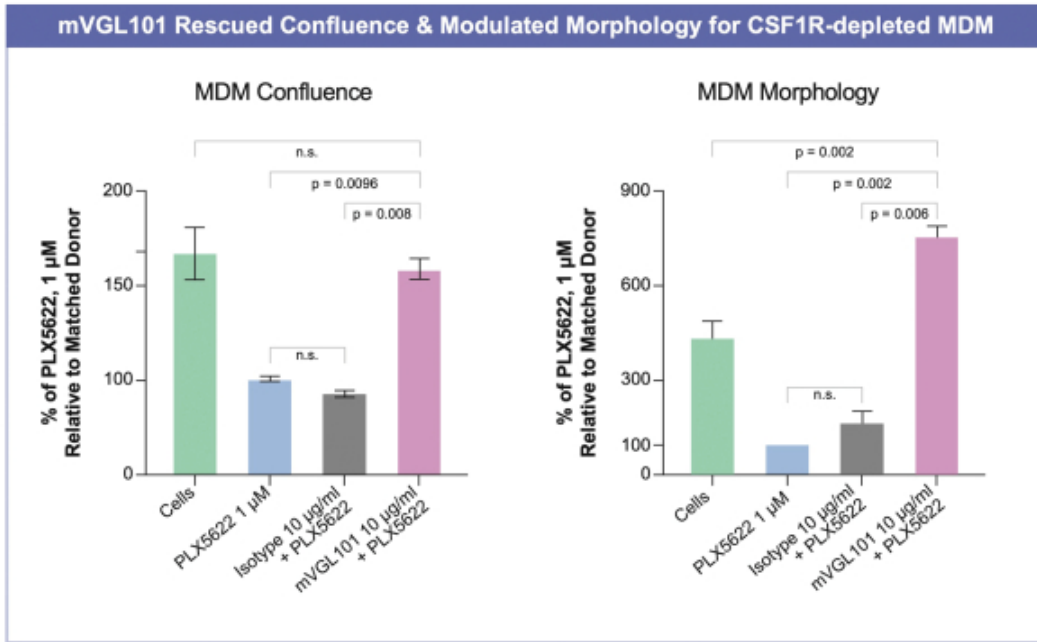
Caspase3/7 Counts/FOV: Number of Cells Staining Positive for Activated Caspase 3/7 within a Field of View (FOV).

Figure 16B: mVGL101 Stimulated a Transition to an Activated Phenotype in MDM Cells and Induced a Morphology Indicative of a Transition to a Motile and Phagocytic State (White Arrowhead) Indicating an Increased Ability to Clear Debris from Dead and Dying Cells



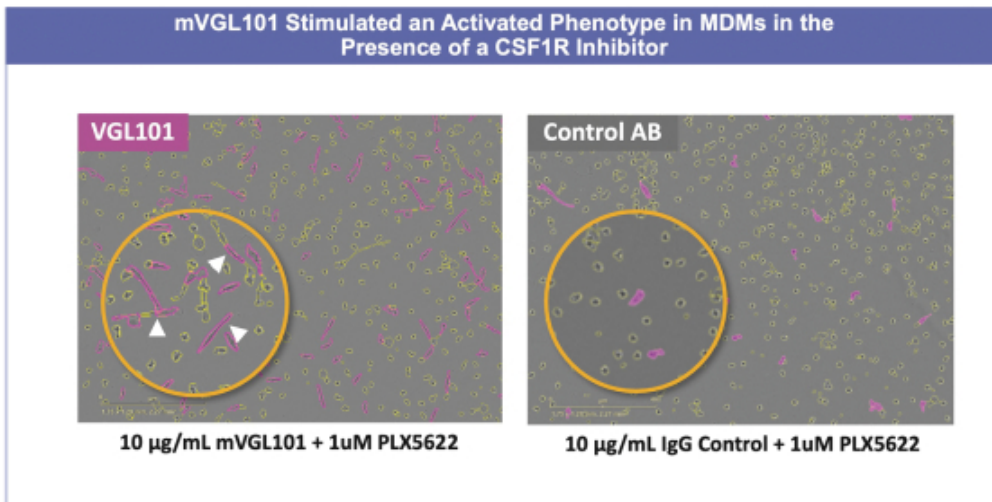
In the second study illustrated in Figures 17A and 17B, we demonstrated mVGL101 rescue of CSF1R deficiency using PLX5622, a highly selective CSF1R inhibitor. MDM cells treated with PLX5622 alone displayed significantly reduced confluence, impaired ability to differentiate, and a dysfunctional microscopic phenotype compared to untreated cells. These changes are similar to what was observed with CSF1 withdrawal in the first experiment described above. Treatment of the PLX5622-treated cultures with mVGL101 rescued the cells from CSF1R inhibition and supported survival, as measured by an automated confluence algorithm (Figure 17A) and promoted morphological changes toward an elongated and motile phenotype, as measured by microscopic quantification of cell shape (Figure 17B), consistent with an activated cell type.

Figure 17A: mVGL101 Rescued Confluence and Modulated Morphology for CSF1R-Depleted MDM



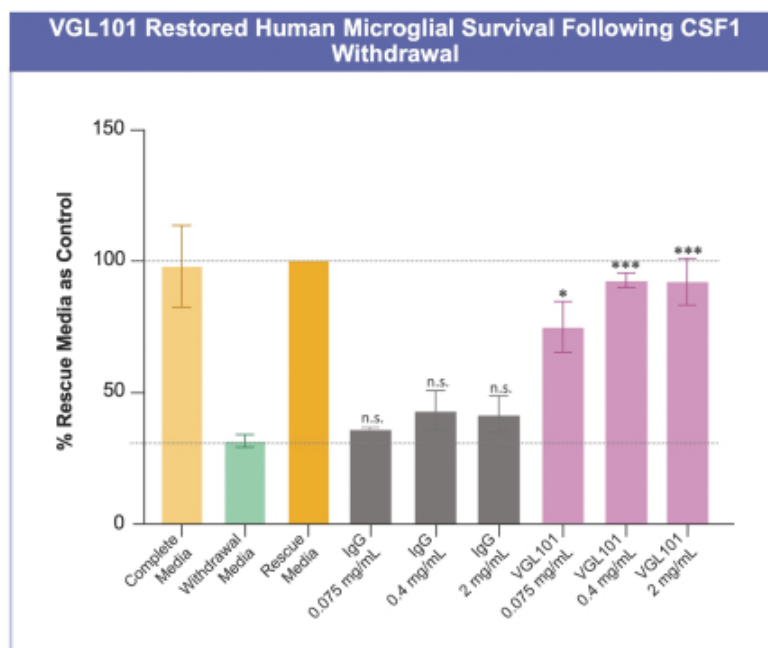
Percentage of PLX5622, 1 μM Relative to Matched Donor: Level of MDM Confluence (left) or Morphological Changes (right) Expressed as a Percentage of Untreated Cells from a Matched Donor; n.s. – not statistically significant.

Figure 17B: mVGL101 Stimulated a Productively Activated Phenotype in MDMs in the Presence of a CSF1R Inhibitor



In another *in vitro* study, we demonstrated that VGL101 compensated for CSF1 withdrawal in maintaining survival of microglia, thereby supporting our hypothesis that VGL101 can improve microglia survival under CSF1R-deficient conditions. In this study, withdrawal of CSF1 reduced microglia survival, similar to that observed in our MDM culture study. Treatment with VGL101 restored microglia survival in a dose-dependent manner to levels similar to that observed with CSF1-treated culture.

Figure 18: VGL101 Restored Human Microglial Survival Following CSF1 Withdrawal



Y-axis (“% Rescue Media as Control”): survival of microglia culture based on levels of adenosine triphosphate generation, a measure of cell metabolism, compared to that observed with Rescue Media; X-axis – Complete Media: cell culture media containing CSF1 at 25 ng/mL and IL34 at 100 ng/mL; Withdrawal Media: Complete Media without CSF1 and IL34; Rescue Media: Withdrawal Media with CSF1 and IL34 added back in at 25 ng/mL and 100 ng/mL, respectively; IgG: immunoglobulin G control; n.s. – not statistically significant vs Withdrawal Media; * - adjusted p-value < 0.05 vs Withdrawal Media; *** - adjusted p-value < 0.001 vs Withdrawal Media

We have not employed available *in vivo* CSF1R-deficient mouse models to support the case for clinical development of VGL101 in ALSP because we believe these models do not adequately recapitulate human disease. Additionally, the available CSF1R[±] mouse models have low penetrance (approximately 50 percent) and do not display symptoms for 12-18 months after birth, which make the model very challenging to utilize.

Clinical Development Plan

In September 2021, we began a non-interventional natural history study of ALSP patients. In November 2021, the FDA cleared our IND for VGL101 in ALSP at doses up to 20 mg/kg, with a partial clinical hold that prohibits evaluation of VGL101 at doses higher than 20 mg/kg. We initiated our first-in-human Phase 1 clinical trial with VGL101 in healthy volunteers in December 2021 and expect to announce topline data in the second

half of 2022. Assuming our Phase 1 trial progresses on our expected timeline, our FDA discussions proceed as currently planned, and we identify an acceptable dose as part of the Phase 1 trial, we believe we can initiate our interventional studies in ALSP as early as the second half of 2022. We have also identified a second rare microgliopathy, cALD, for which we plan to submit an IND amendment to our open IND to conduct a Phase 2 clinical trial in the first half of 2023 following the completion of the VGL101 Phase 1 clinical trial in healthy volunteers. We also plan to submit a protocol amendment to the FDA under our open IND to conduct a Phase 1b biomarker-based, PoM clinical trial of VGL101, expected to begin in the second half of 2022, in genetically defined AD patients with or without the relevant *TREM2* variants to inform subsequent clinical trials with our small molecule agonist.

- **Natural History Study:** We began this study in September 2021 with the objectives of further understanding the phenotype and natural course of the disease, the patient journey and treatment paradigm, as well as further developing, and evaluating biomarkers and potential clinical outcome measures. One of the most important objectives for the natural history study is to serve as a potential synthetic control arm which will function as a comparator group in our interventional trial. Patients who participate in our natural history study may also participate in our interventional clinical trials.
- **First-In-Human Phase 1 Trial:** This clinical trial will be a dose escalating (single and multiple ascending dose (SAD/MAD)) trial of VGL101 in healthy volunteers, including subjects of various ethnic backgrounds. This trial is designed to evaluate safety and tolerability as well as measure biomarkers to confirm target engagement such as sCSF1R, sTREM2 and induced microglial factors found in CSF. This trial will provide a foundation for clinical trials of VGL101 in patients with ALSP as well as with other neurodegenerative disorders. We submitted our IND for the Phase 1 trial in October 2021 and received clearance from the FDA to initiate dosing of healthy volunteers in our Phase 1 SAD/MAD clinical trial at doses up to 20 mg/kg. The SAD portion of the Phase 1 trial includes four cohorts, and the MAD portion of the trial includes one cohort that would be dosed after successful completion of the four SAD cohorts. Prior to dosing patients in additional cohorts, we will be required to resolve a partial clinical hold placed by the FDA that prohibits the evaluation of VGL101 at doses higher than 20 mg/kg. We do not believe the partial clinical hold will have a material impact on the trial timeline. We initiated this Phase 1 trial in the U.S. in December 2021 and expect to announce topline data in the second half of 2022. Our current plan for a subsequent Phase 2/3 trial in ALSP is to evaluate VGL101 at doses of up to 20 mg/kg, pending safety results of the Phase 1 trial and discussions with the FDA, based on our current dosing rationale for VGL101.
- **Phase 2/3 Clinical Trial:** We plan to begin a seamless Phase 2/3 trial in ALSP patients, assuming our Phase 1 trial progresses on our expected timeline, our FDA discussions proceed as currently planned, and we identify an acceptable dose as part of the Phase 1 trial. The Phase 2 portion of that trial could begin as early as second half of 2022. Our clinical development plan is based on pre-IND interactions with the FDA during which we provided information regarding the devastating nature of ALSP, the prevalence of the disease and our proposed development plan. Based on this information, the FDA suggested we consider a seamless Phase 2/3 trial design as part of our clinical development plan to support a BLA.

The Phase 2 part of the trial would be a PoC trial with the objectives of:

- evaluating the safety and tolerability of VGL101 in patients with ALSP;
- evaluating the pharmacokinetics of VGL101 in patients with ALSP;
- assessing fluid, such as NfL, and imaging, such as MRI, biomarkers of disease progression in patients with ALSP; and
- demonstrating fluid and brain imaging biomarker efficacy.

[Table of Contents](#)

In addition, we plan to generate data from VGL101 clinical trials to inform our TREM2 small molecule agonist program for AD. We are planning early human translational work with VGL101 in AD to evaluate the effect of TREM2 agonism in genetically defined subpopulations and compare them with non-carrier cohorts.

Specifically, we plan to explore whether AD susceptibility genes related to microglial dysfunction confer differential responses to VGL101 as part of the VGL101 Phase 1 SAD/MAD trial to evaluate the TREM2-related biomarker profile.

If we obtain favorable results in our Phase 1 SAD/MAD trial, we also plan to submit a protocol to the FDA under our open IND to conduct a Phase 1b biomarker-based, PoM trial of VGL101 in genetically defined AD patients with or without the relevant *TREM2* variants. Although VGL101 and our small molecule TREM2 agonists are different modalities with different product profiles, because both of them have been demonstrated to result in similar effects on TREM2, we expect our PoM trial of VGL101 to inform the target patient population and design for future larger studies that evaluate the safety and efficacy of our small molecule agonist. We are currently conducting feasibility studies to identify AD patients carrying genetic variants associated with microglial dysfunction and have initiated protocol preparation for our Phase 1b biomarker trial, which we expect to begin in the second half of 2022. We believe this approach will help reduce translational risk and optimize the selection of the initial patient population recruited for our small molecule program.

Patient Engagement and Recruitment

We have created a strong global network of KOLs, centers of excellence, and genetic counseling practices that each treat ALSP patients and work with families affected by the disease. These span all geographies but are mainly focused in areas where ALSP clusters have been identified (North America, Europe, and Asia).

We have launched the world's first patient-facing ALSP informational website and actively support the first and only patient advocacy organization dedicated to ALSP, the Sisters' Hope Foundation. Strong partnerships with patient organizations like Sisters' Hope Foundation enable us to learn in real-time as more patients are diagnosed with ALSP. We have also partnered with genetic testing companies to increase disease awareness and help with patient engagement for upcoming clinical trials.

We are also partnering with a larger leukodystrophy umbrella organization, the United Leukodystrophy Foundation, as well as rare disease umbrella organizations such as NORD, Global Genes, and the Every Life Foundation, to provide disease education and raise awareness of ALSP.

We have formed a PCAC consisting of members who can provide a well-rounded patient and caregiver perspective. Members of the PCAC include a patient who has received a transplant, an asymptomatic patient, a parent of a patient, a caregiver, and a genetic counselor. The PCAC will offer guidance on elements of the patient experience to help us embed the patient voice into the clinical infrastructure to support patient identification, recruitment, and retention.

We play a central role in the development of an ALSP KOL network to support global collaboration. We intend for this organized KOL network to focus on streamlining and building consensus around disease status definitions and disease measurement tools, as well as working on ways to educate neurologists to recognize and test for the relevant gene mutation.

To date, through these efforts, we have identified a significant number of symptomatic, pre-symptomatic, and asymptomatic carriers of *CSF1R* mutations, which we anticipate will facilitate recruitment into our clinical program.







Indication Expansion in Rare Leukodystrophies

According to the National Institute of Neurological Diseases and Stroke, leukodystrophies include more than 50 rare, genetic disorders that selectively affect the CNS’ white matter, and are typically caused by defects that affect its generation, maintenance, and repair. Collectively, they afflict approximately 99,000 people in the U.S.

We plan to pursue additional indications in this space, where a breakdown of healthy microglial function acts as either a driver or a contributor to the neurodegenerative process. Operationally, our decisions are informed by the availability of translational tools, overall disease profile, medical need and clinical development tractability, competition, and commercial feasibility. From a mechanistic perspective, our approach is to initially target indications which TREM2 agonists can potentially address.

We have identified several white matter diseases as potential therapeutic opportunities that share similar characteristics with ALSP and appear to be driven by either peroxisomal or lysosomal deficits (Table 1). These disorders include cALD, MLD, and Krabbe. Our hypothesis is that we can restore microglial function resulting from loss-of-function mutations with TREM2 agonists in these diseases.

Table 1: Additional Leukodystrophies for Potential Pipeline Expansion

	 Epidemiology	 Genetics	 Pathology	 Unmet Medical Need	 Diagnosis	 Treatment
cALD	Rare ~7-8K in U.S. & EU	<i>ABCD1</i> mutations	Progressive cerebral inflammatory neurodegeneration	Significant Vegetative state: 2 yrs Death: 10 yrs	Blood test Newborn screening	No approved tx HSCT in limited pts
MLD	Rare ~2-8K in U.S. & EU	<i>ASA</i> and <i>PSAP</i> mutations	Progressive cerebral inflammatory neurodegeneration	Significant Infantile form – rapid progression	Clinical/Imaging Genetic screening	No approved tx HSCT in limited pts
Krabbe	Rare ~1/100K newborns in U.S.	<i>GALC</i> mutations	Progressive cerebral inflammatory neurodegeneration	Significant Infantile form – rapid progression	Enzymatic testing Limited newborn screening	No approved tx HSCT in limited pts

HSCT: Hematopoietic stem cell transplantation.

We have selected cALD as the first follow-on indication because microglial dysfunction in this disease is more thoroughly defined than it is in other indications. cALD is the severe, progressive neurodegenerative form of X-linked adrenoleukodystrophy (X-ALD), a rare metabolic disorder affecting the microglia. The birth prevalence of X-ALD is estimated at one in 3,878 males in a study on newborn screening for this disease in 2017.

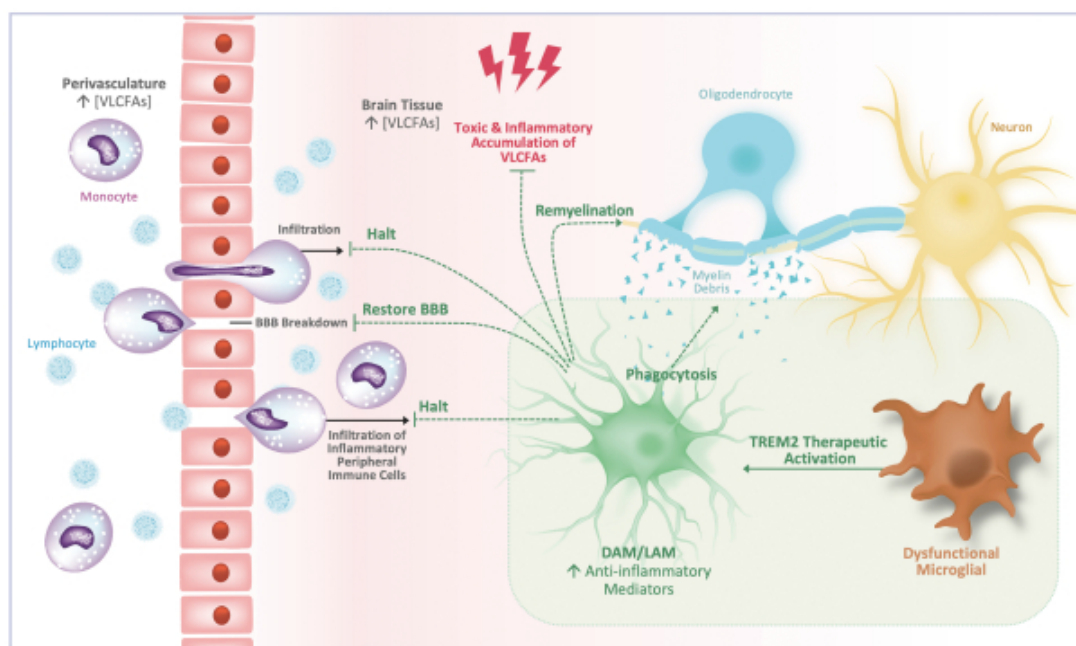
Approximately 37-47% of males diagnosed with ALD will progress to cerebral ALD with a majority in their childhood and adolescent years. A smaller number of adult men with adrenomyeloneuropathy (AMN), the slowly progressive adult form of x-ALD, will also develop cALD. cALD is characterized by progressive cerebral demyelination and inflammation in the white matter of the brain leading to a rapidly progressive neurologic decline and resulting in severe loss of neurologic function and death in most untreated patients.

Specifically, cALD is caused by loss-of-function mutations in the *ABCD1* gene, which encodes a transporter protein for very long chain fatty acids (VLCFAs) into peroxisomes, intracellular organelles critical for lipid metabolism. As illustrated in Figure 19, *ABCD1* loss-of-function mutations result in toxic and inflammatory accumulation of VLCFAs and lead to oxidative stress, as well as energetic and functional microglial deficits resulting in inflammation, increased myelin debris, axonal injury and BBB breakdown. *ABCD1* is highly expressed in microglia where *ABCD1*-deficiency leads to well-described microglial dysfunction.

Figure 19 also illustrates our hypothesis on VGL101's ability to reverse microglial dysfunction caused by *ABCD1* mutations by activating the TREM2 pathway to transition microglia to DAM and lipid associated microglia (LAM), microglia associated with lipid debris removal. The resulting DAM and LAM may promote proliferation, survival, and ability to maintain an anti-inflammatory environment, while enhancing phagocytosis of myelin debris, enabling remyelination and reducing VLCFA accumulation. We believe VGL101-mediated TREM2 agonism may also have beneficial effects on the BBB and could halt the infiltration of inflammatory leukocytes into the brain.

We plan to submit an IND amendment to our open IND to begin a Phase 2 clinical trial in cALD in the first half of 2023, following the completion of the VGL101 Phase 1 clinical trial in healthy volunteers. We believe patient availability to participate in our clinical trial will be facilitated by expanded newborn genetic screening in the U.S., disease awareness, endpoint qualification and the mature nature of patient advocacy efforts.

Figure 19: cALD is a Microglial-modulated Leukodystrophy Caused by Peroxisomal Deficiency, Potentially Addressable by TREM2 Agonism



Pink area illustrates the involvement of microglia in cALD and green area/arrows illustrate our hypothesis of mechanism of action of TREM2 agonism as a potential therapeutic strategy; LAM - lipid-associated microglia; h [VLCFAs] - increase in VLCFA concentrations.

Small Molecule TREM2 Agonists for the Treatment of Neurodegenerative Diseases

We are advancing our novel, orally-available, small molecule TREM2 agonist for the treatment of more common neurodegenerative diseases, beginning with genetically defined AD populations associated with *TREM2* gene variants. An orally available and highly CNS penetrant small molecule has many potential clinical and commercial advantages in large chronic indications, including ease of administration and use in outpatient settings. We also intend to explore the potential of our small molecule agonist for the general AD population, if clinical data support this approach.

Our Small Molecule TREM2 Agonist Program

We have in-licensed more than 1,000 small molecule TREM2 agonist compounds resulting from a robust hit-to-lead and lead optimization program. Expanding on this program, we have synthesized more than 300 additional compounds.

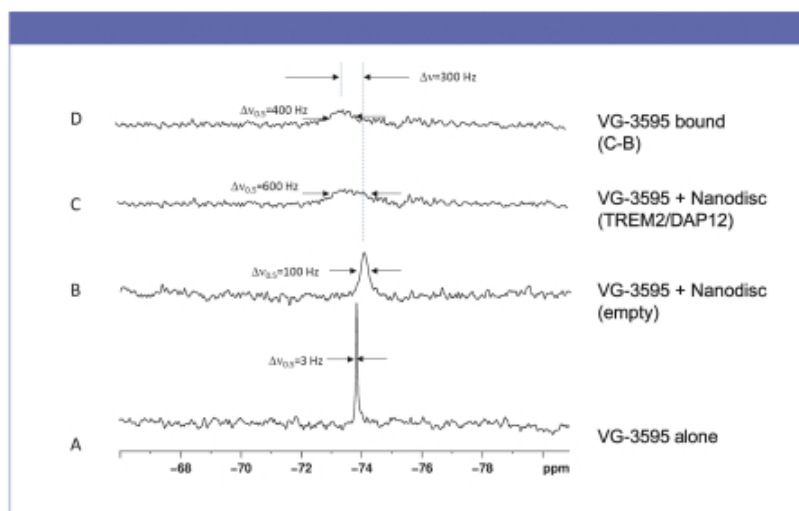
We have demonstrated in preclinical studies that compounds in our lead series are highly selective, potent activators of TREM2, and which we believe are highly CNS penetrant to facilitate blood brain barrier crossing after oral dosing. In addition, we have ongoing screening efforts that have resulted in the discovery of a second series with a different chemical core structure than the lead series. Our second series is currently in the early lead optimization stage.

We believe the physical and chemical attributes of the small molecule candidates in our lead series make them promising for further drug development, including solubility and oral bioavailability, that we believe are suitable for conventional formulation into a drug product. Based on our analysis, preliminary safety screening with the compounds in our lead series in standard assays has not identified any major off target binding, cardiac toxicity, as measured by a human cardiac receptor assay, called hERG, or drug metabolism issues, as measured by liver metabolism assays, known as cytochrome P450 (CYP) induction and time dependent cytochrome P450 inhibition (CYP TDI). We expect to select a development candidate from our lead series in the first quarter of 2022 and, following IND-enabling studies, initiate a first-in-human healthy volunteer trial.

Data collected from single oral dose studies in human *TREM2* knock-in mice have shown that our prototypical small molecule TREM2 agonists recapitulated many of the gene expression changes and much of the *IP-10* induction mediated by a single dose of VGL101.

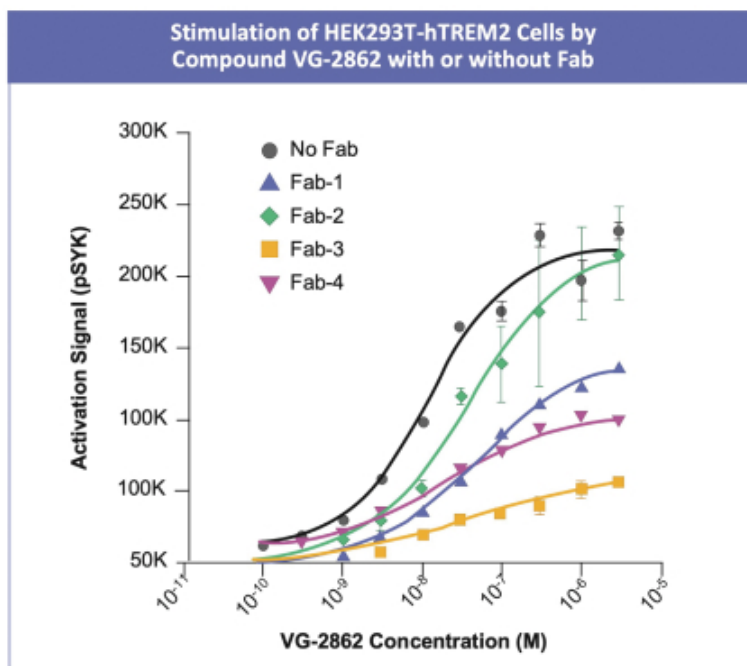
In vitro experiments have been conducted with membrane-like structures, called nanodiscs, into which TREM2 and DAP12 have been engineered. Direct binding between a radioisotope-labeled prototype small molecule compound VG-3595 and the membrane associated TREM2 is determined using nuclear magnetic resonance (NMR) analyses. Figure 20 below shows NMR data from a series of experiments which, taken together, indicated that VG-3595 directly bound TREM2-containing nanodiscs with high affinity. The NMR data for VG-3595 incubated with an empty nanodisc (B) is subtracted from the NMR data for VG-3595 incubated with TREM2/DAP12 loaded nanodiscs (C), and the difference represents specifically bound VG-3595 (D).

Figure 20: Small Molecule TREM2 Agonist Target Engagement with TREM2 Confirmed *In Vitro*



In other experiments using engineered cell lines overexpressing human TREM2 and human DAP12 for the binding target, we have shown that antibody fragments (Fabs) that bind to TREM2, but cannot trigger TREM2 activation, inhibited small molecule mediated TREM2 activation by another prototype TREM2 agonist compound, VG-2862 (Figure 21). Taken together, we believe the NMR binding data and the antibody fragment competition data are encouraging evidence for direct interactions between our prototype small molecule TREM2 agonists and TREM2.

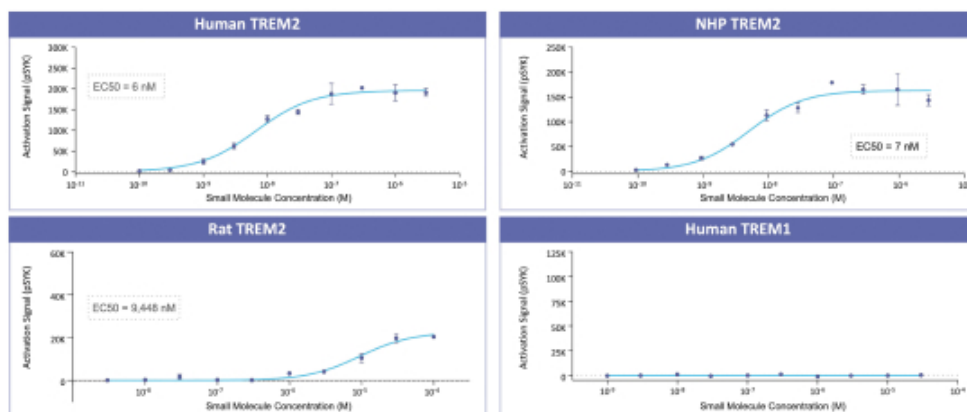
Figure 21: Anti-TREM2 Fabs Inhibit Small Molecule Agonist Activity



Activation Signal (pSYK): Measurement of Phosphorylation Level of SYK; VG-2862 Concentration: Molar Concentration (M) of VG-2862 on a Logarithmic Scale: $1 \times 10^{-11}M$, $1 \times 10^{-10}M$, $1 \times 10^{-9}M$, $1 \times 10^{-8}M$, $1 \times 10^{-7}M$, $1 \times 10^{-6}M$, $1 \times 10^{-5}M$; No Fab: no Fab added; Fab 1-4: Fab 1 to 4 added.

We have demonstrated the selectivity of prototype small molecules in experiments comparing HEK cells engineered with either human TREM2 or human TREM1, both of which use the adaptor DAP12 for downstream signaling. In these studies, prototype TREM2 agonists generated a SYK activation signal in cells expressing human TREM2 but not in cells expressing human TREM1, as shown in Figure 22 below. Additionally, as shown in Figure 22, we demonstrated our prototype small molecules had high selectivity for human and NHP TREM2 over rat TREM2.

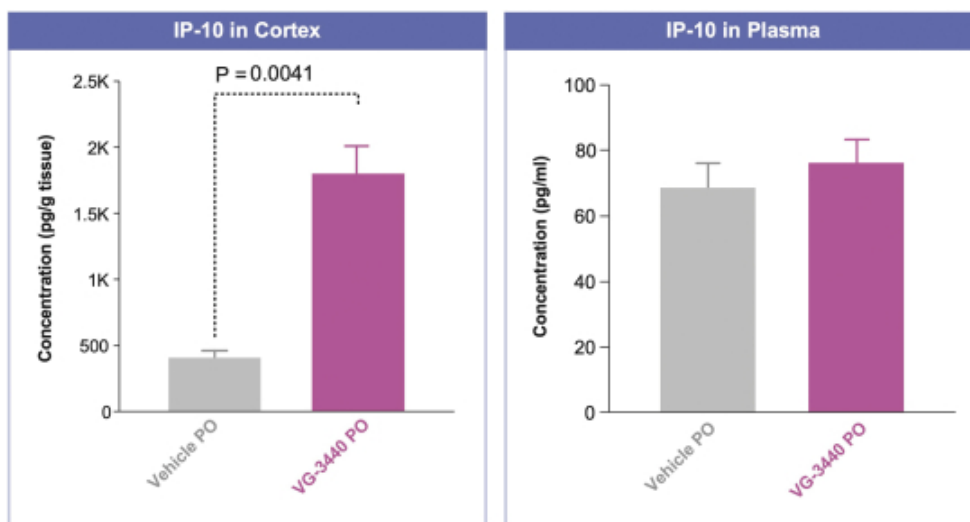
Figure 22: Small Molecule Agonist is Selective for human and NHP TREM2



y-axis: Activation Signal (pSYK) - Measurement of SYK Phosphorylation Level. x-axis: Small Molecule Concentration - Molar Concentration (M) of prototype small molecule TREM2 agonist on a Logarithmic Scale (1x10⁻¹¹M, 1X10⁻¹⁰M, 1X10⁻⁹M, 1X10⁻⁸M, 1X10⁻⁷M, 1X10⁻⁶M, 1X10⁻⁵M, 1X10⁻⁴M). EC50 - Concentration of a compound where 50% of its maximal effect (SYK phosphorylation) is observed.

We have also conducted *in vivo* studies in human *TREM2* knock-in mice analogous to those shown above for VGL101. Oral dosing with a prototype small molecule agonist (VG-3440) demonstrated increases in the microglial biomarker, IP-10, in the brain after 24 hours. There were no increases in plasma IP-10 concentrations, indicating selective microglia targeting in the brain (Figure 23).

Figure 23: Prototype Small Molecule TREM2 Agonist Productively Activated Microglia in Human *TREM2* Knock-in Mice without Peripheral Effects

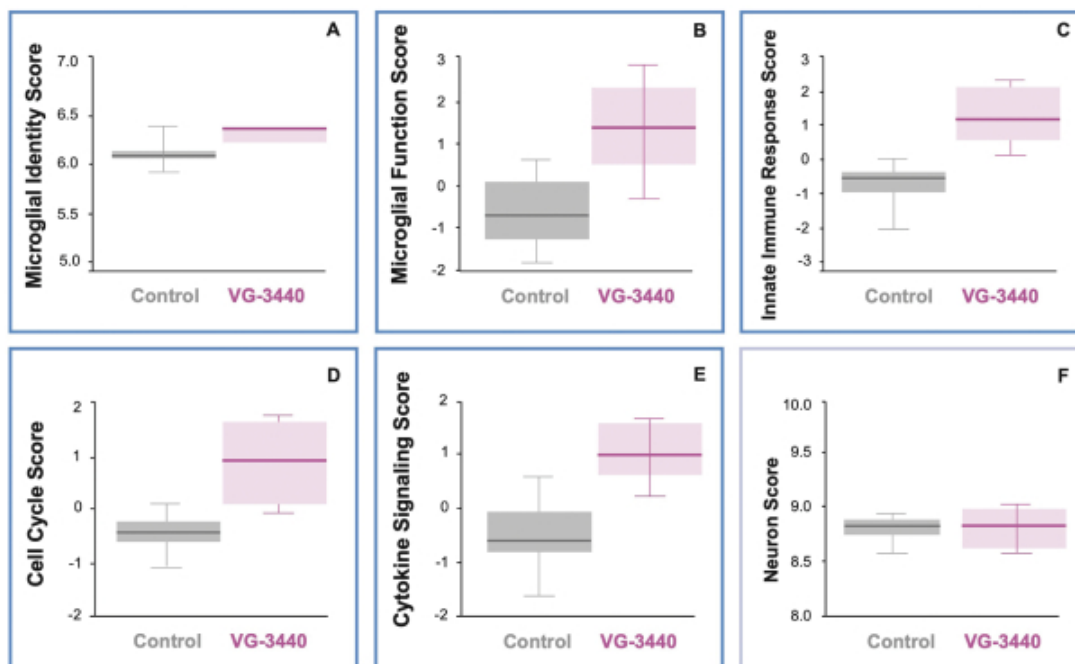


Concentration (pg/g tissue): Concentration of IP-10 Protein (pg) Per Gram of Cortical Homogenate; Concentration (pg/ml): Concentration of IP-10 protein (pg) Per Milliliter of Plasma; Vehicle PO—Oral Administration (PO—per os) of Inactive Compound; VG-3440 PO: Oral Administration of Prototype Small Molecule TREM2 at 50 mg/kg in Two Doses. The IP-10 level for VG-3440 in Cortex group was determined to be statistically different than that for the Vehicle with a P value < 0.01.

Table of Contents

In the human *TREM2* knock-in mouse model, we demonstrated that our prototype small molecule *TREM2* agonists selectively increased the expression of genes related to microglial identity, microglial function, innate immune response, cell cycle (proliferation genes), and cytokine signaling (neuroprotection genes) in a similar manner to what we have demonstrated for VGL101, as shown in Figure 24 below. There was no increase in either neuronal or astrocytic gene expression following dosing with the small molecule *TREM2* agonist, further demonstrating microglia-specific targeting through *TREM2*. Therefore, similar to VGL101, our small molecule *TREM2* agonist prototype, VG-3440, reached the brain, engaged its target, human *TREM2*, and activated microglia to increase gene programs that define normal functioning states related to damage surveillance, response to damage sensing, and neuroprotection.

Figure 24: VG-3440 Increased the Expression of Genes Associated with Microglial Identity, Microglial Function, Innate Immune Response, Cell Cycle, and Cytokine Signaling, Without Affecting the Gene Expression in Neurons



y-axes – reflect the level of gene expression changes based on analyses comparing total brain RNA (gene transcripts) isolated from negative control (antibody without *TREM2* binding) and mVGL101-treated mice. A: “Microglial Identity Score”—gene expression associated with microglial identity. B: “Microglial Function Score”—gene expression associated with microglial activation. C: “Innate Immune Response Score”—gene expression associated with innate immunity and neuroprotection. D: “Cell Cycle Score”—gene expression associated with cell cycle and proliferation. E: “Cytokine Signaling Score”—gene expression associated with cytokine signaling and neuroprotection. F: “Neuron Score”—gene expression associated with neuronal identity; VG-3440 orally administered at 50 mg/kg in 2 doses

Overview of Alzheimer’s Disease

AD is the most common cause of dementia, a general term for the loss of memory and other cognitive abilities severe enough to interfere with daily life. AD accounts for 60-80% of dementia cases, and the majority

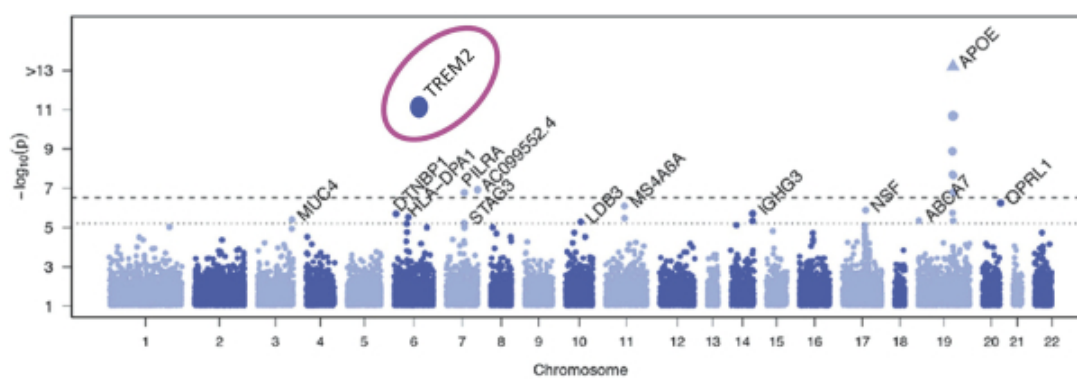
of people with AD are aged 65 and older. A progressive disease, AD usually presents with mild memory loss and progresses to include disorientation, loss of initiative or judgment, difficulty with self-care, behavioral problems, and general mental decline. People aged 65 and older survive an average of four to eight years after diagnosis, with some living as long as 20 years. These data reflect the slow, uncertain progression of the disease, which is the sixth-leading cause of death in the U.S.

The Alzheimer’s Association estimates that 6.2 million people in the U.S. are living with AD in 2021. By 2050, this number is projected to rise to nearly 13 million. The costs of health care and long-term care for people with AD to our healthcare system are substantial. According to the Alzheimer’s Association, the aggregate cost of AD and other dementias is expected to be \$355 billion in 2021, and this number could increase to as much as \$1.1 trillion by 2050.

TREM2 in Alzheimer’s Disease

Loss-of-function *TREM2* variants occur in seven to eight percent of the AD population and are linked to both disease progression and worsened patient outcomes. Several genetic variants in *TREM2* have emerged from GWAS (Figure 25) that significantly increase AD risk by two- to four- fold, an increase in risk comparable to that associated with having one copy of *ApoE4*. The most common and most well-studied *TREM2* variant known to increase the risk of AD is the R47H variant. The R47H variant, which represents two to three percent of the AD population, has been reported to triple AD risk in GWAS and is associated with a 23% more rapid progression of dementia compared with non-variant carriers. Other *TREM2* variants have also been implicated as risk factors for developing AD, including R62H, L211P, and R136Q), all of which are loss-of-function variants.

Figure 25: Exome Sequencing Based GWAS Identified *TREM2* Mutations as an AD Risk Factor



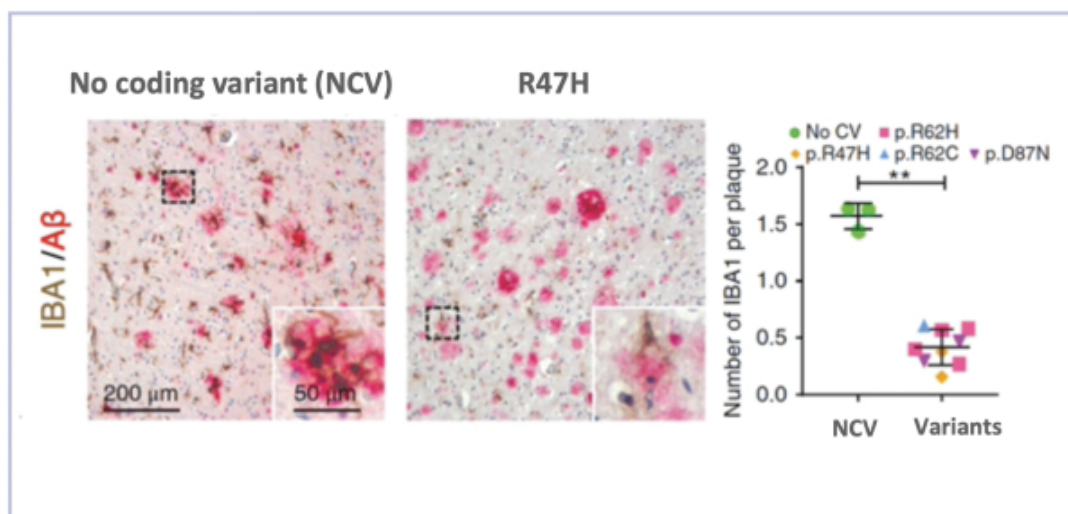
Y-axis – reflects the level of significance for each corresponding gene and its association for the risk of developing AD. The larger the y-axis number (negative logarithmic scale for p) for a gene the more significant it is as a genetic AD risk factor. The dotted line indicates a threshold of $p < 6.1 \times 10^{-6}$ and the dashed line indicates a threshold of $p < 3.1 \times 10^{-7}$. Bis et al. Mol Psychiatry 2020.

Our understanding of the role of microglial dysfunction in plaque development in AD is based on the observation that normally functioning microglia reduce levels of toxic amyloid plaques in the brain, while increasing the number of inert, dense core plaques. In addition, normal *TREM2* function is required to prevent AD-associated tau protein aggregates from forming. AD models have shown that *TREM2* plays a protective role throughout all stages of disease progression.

In AD patients carrying the R47H *TREM2* variant, the number of microglia associated with amyloid-β plaques is reduced, indicating a defect in responding to damage signals from plaque, as illustrated in Figure 26. The graph on the right indicates a 3-fold reduction of IBA-1-staining cells (microglia) between R47H *TREM2*

carrier patients and normal TREM2 patients. R47H TREM2 patient brains also showed reduced barrier function around neurotoxic amyloid- β compared with normal TREM2 AD patient brains, seen as reduced clustering of IBA-1-staining cells around amyloid- β plaques (“R47H” versus “No coding variant (NCV)” in the brain histopathology images). R47H TREM2 AD patients also experienced more rapid disease progression and a greater number of co-morbidities, such as a neuropathological protein accumulation, called α -synucleinopathy.

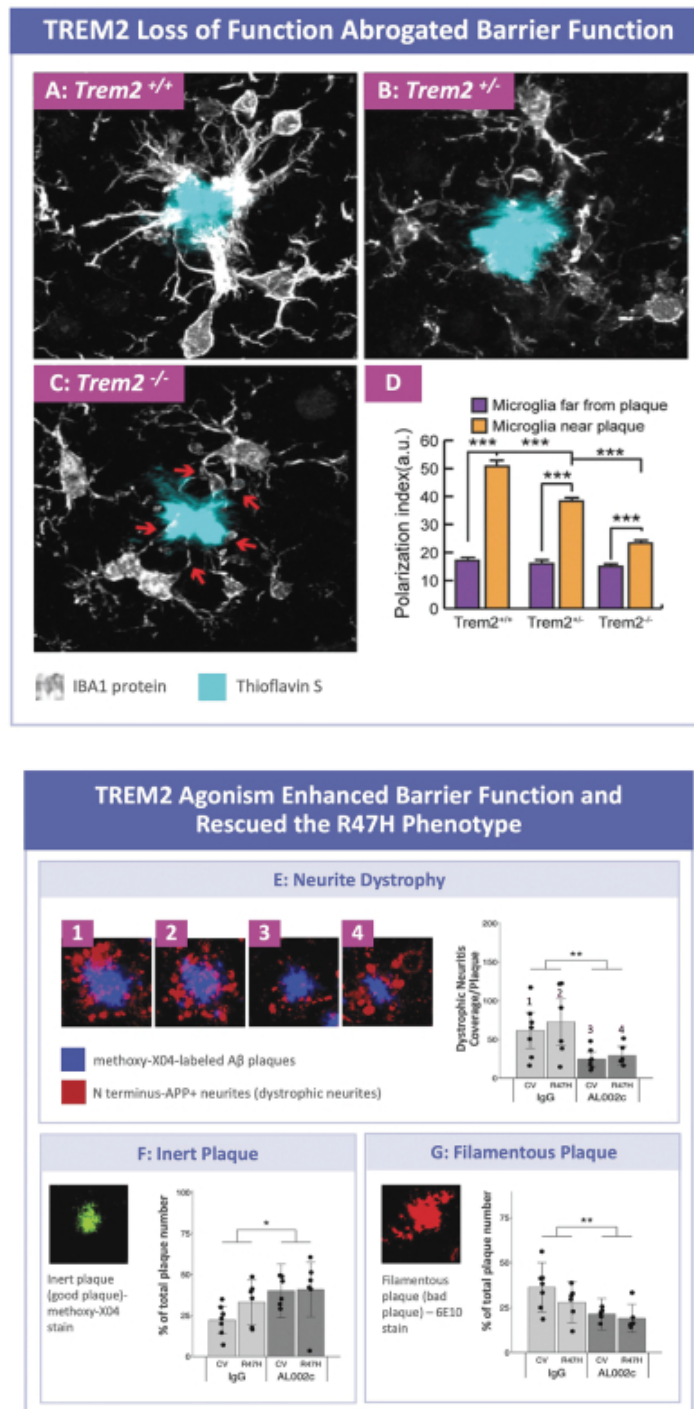
Figure 26: Impaired Microglia Clustered Around A β Plaques with TREM2 Coding Variants



Immunohistochemical staining of brain tissue: IBA1/A β - IBA1 staining in brown and amyloid- β staining in magenta. Graph quantifies the number of IBA1-stained cells (indicative of microglia) per amyloid- β plaque for patients with normal TREM2 (“NCV”) (green circles) and TREM2 variants (“Variants”), including R47H (orange diamonds), R62H (pink squares), R62C (blue triangles) and D87N (purple triangles). Parhizkar et al. Nat Neurosci. 2019.

The impaired barrier function with R47H TREM2 and *Trem2* knock-out is further demonstrated in an AD mouse model which induces AD neuropathology such as amyloid- β plaques and neuronal dysfunction (Figure 27). Microglia (white) from *Trem2* knock-out mice failed to form a protective barrier around amyloid- β plaque (blue) to reduce regional amyloid neurotoxicity, compared to control (*Trem2*^{+/+}) mice (Figures 27 A and C). These microglia showed a *Trem2* dosage effect in their ability to form a protective barrier around amyloid- β plaque, as seen in Figure 27D which shows the allelic reduction in *Trem2* and the stepwise decrease in microglia around plaques. The barrier defect in microglia from R47H TREM2 mice is correlated with increased neuritic dystrophy (abnormal nerve processes; red staining in Photograph 2 in Figure 27E), with increased filamentous, neurotoxic amyloid- β plaques (red staining in Figure 27G) and with relatively reduced inert, non-neurotoxic plaque (green staining in Figure 27F). This pathobiology is thought to be due to defective responses to damage signals caused by reduced TREM2-ligand interactions and an inability of microglia to convert to the DAM state. The neuropathology induced in this AD mouse model, which is more enhanced with R47H TREM2 due its reduction of function (as compared to CV TREM2), was ameliorated by treatment with a TREM2 agonist antibody (graphs in Figure 27 E – G).

Figure 27: TREM2 Promoted Barrier Function and Reduced Toxic Filamentous Plaque

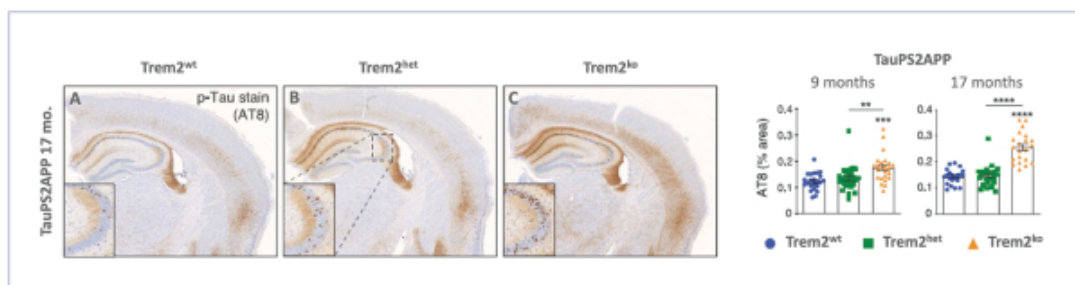


A – C: Immunohistochemical staining of IBA1 (white, indicative of microglia) and thioflavin-S (blue, indicative of amyloid-β plaques) in brain tissue of AD mouse model (5XFAD). C: red arrows indicate inability of microglia to move toward and surround (i.e. polarize) the plaque. D: quantification of ability of microglia to polarize around plaques (“Polarization index”) in arbitrary units (“a.u.”) for various Trem2 genetic backgrounds, ***: $p < 0.001$. E: photographs 1 – 4: immunohistochemical staining of amyloid-β plaques (blue) and dystrophic neurites (red) in AD mouse model (5XFAD) carrying different human TREM2 genes: 1 – common variant (CV) TREM2 treated with control immunoglobulin G (IgG); 2 – R47H TREM2 treated with IgG; 3 – CV TREM2 treated with AL002c; 4 – R47H TREM2 treated with AL002c; graph shows quantification of number of dystrophic neurites covering each plaque for photographs 1 – 4, ** - $p < 0.01$; F and G: photographs show representative inert (good, green staining for methoxy-X04) and filamentous (bad; red staining for 6E10) amyloid-β plaques and their respective contribution to overall plaque number in different TREM2 backgrounds (CV or R47H) treated with IgG or AL002c, * - $p < 0.05$; ** - $p < 0.01$. A – D: Yuan et al Neuron 2016; E – G: Wang et al J Exp Med 2020.

As shown in Figure 28 below, AD model mice carrying Trem2^{+/+} (Figure 27A, Trem2^{wt}), Trem2^{+/-} (Figure 28B, Trem2^{het}), or Trem2^{-/-} (Figure 28C, Trem2^{ko}) alleles demonstrated stepwise reduction of Trem2 levels that were correlated with increased neuropathology, as measured by tau accumulation (Figures 28B and C, brown stained dots with the graph quantifying the differences in tau accumulation), and with amyloid-β pathology in the brains of mice. These results provide strong evidence that TREM2 restrains the accumulation of tau in the presence of amyloid-β pathology. The failure of Trem2^{-/-} microglia to restrain tau accumulation is thought to be driven by their inability to transition to the neuroprotective TREM2-dependent DAM state. We believe TREM2 agonism has the potential to provide therapeutic benefit against tau accumulation, which is believed to occur in the later stages of AD.

We believe the robust body of experimental and genetic evidence points to TREM2 as a key modulator of amyloidosis and tauopathy, and that activating TREM2 has potential to provide disease modifying benefit to those living with AD.

Figure 28: TREM2 Restrained the Enhancement of Tau Accumulation



TauPS2APP: mouse with PS2APP transgene and mutant tau gene; p-Tau - phosphorylated tau protein; AT8 - antibody detecting p-Tau and used for immunohistochemical staining of p-Tau in a brown color; wt - wild type; het - heterozygous; ko - knockout; graph shows the percentage of a defined area covered by AT8-staining cells for various Trem2 genetic backgrounds; **: $p < 0.01$; ***: $p < 0.001$; ****: $p < 0.0001$. Lee et al Neuron 2021.

Our Small Molecule TREM2 Agonist Clinical Strategy

Our strategy in AD is to follow a precision medicine approach that first establishes the role of TREM2-mediated microglial dysregulation in the pathogenesis of AD within certain genetically defined patient subpopulations, which includes TREM2 and other variants. We are planning early human translational work with VGL101 in AD to evaluate the effect of TREM2 agonism in these genetically defined subpopulations and compare them with non-carrier cohorts.

[Table of Contents](#)

We plan to explore whether AD susceptibility genes related to microglial dysfunction confer differential responses to VGL101 as part of the VGL101 Phase 1 SAD/MAD trial to evaluate the TREM2-related biomarker profile.

If we obtain favorable results in our Phase 1 SAD/MAD trial, we also plan to submit a protocol to the FDA under our open IND to conduct a Phase 1b biomarker-based, PoM trial of VGL101 in genetically defined AD patients with or without the relevant *TREM2* variants. The trial is intended to inform the target patient population and design for future larger studies that evaluate the safety and efficacy of our small molecule agonist. We are currently conducting feasibility studies to identify AD patients carrying genetic variants associated with microglial dysfunction and have initiated protocol preparation for our Phase 1b biomarker-based, PoM trial, which we expect will begin in the second half of 2022. We believe this approach will reduce translational risk and optimize the selection of the initial patient population recruited for our small molecule program.

Competition

The biotechnology and pharmaceutical industry is characterized by rapidly changing technologies, significant competition and a strong emphasis on intellectual property. These characteristics also apply to the development and commercialization of treatments in neurodegenerative diseases, including AD. While we believe that our focus, expertise, scientific knowledge and intellectual property provide us with competitive advantages, we face competition from several different sources, including large and small biopharmaceutical companies, academic research institutions, government agencies and public and private research organizations, that conduct research, seek patent protection, and establish collaborative arrangements for research, development, manufacturing and commercialization.

No products have been approved to treat ALSP, and we are not aware of any in development other than VGL101. Academics have investigated the use of hematopoietic stem cell transplantation in a small number of ALSP patients, however, we believe this modality has limited benefits and several key limitations.

We are aware of one company, bluebirdbio, Inc., which received marketing approval for SKYSONATM (elivaldogene autotemcel) in July 2021 in the European Union for a cALD treatment. In October 2021, the company announced it will withdraw its regulatory marketing authorization for SKYSONATM from the European Union. In the U.S., development of elivaldogene autotemcel was put on clinical hold in August 2021 following a report that one treated patient developed myelodysplastic syndrome (MDS), a type of blood cancer. Two additional cases of MDS have been subsequently reported. In December 2021, bluebirdbio announced that the FDA has accepted its BLA for elivaldogene autotemcel for cALD. As of December 2021, a second company, Minoryx Therapeutics, Inc. is developing a small molecule therapeutic for the treatment of cALD in a Phase 2/3 trial.

Currently, there are two other companies that are in the early stages of developing TREM2 agonists for the treatment of AD. We consider our direct competitors to be Alector, Inc. and its corporate partner, AbbVie Inc., Denali Therapeutics, Inc. and its corporate partner, Takeda Pharmaceutical Company, Cognyx Pharmaceuticals, Inc. and Muna Therapeutics, Inc.

There are several existing treatments marketed today for the treatment of AD, which primarily provide symptomatic relief. Notably, Biogen Inc., recently received FDA accelerated approval for a product based on reduction of β -amyloid plaques, a biomarker that may predict a reduction in clinical decline; continued approval may require demonstration of disease-modifying benefits. Other pharmaceutical and biotechnology companies are pursuing disease-modifying treatments for AD and other common neurodegenerative disorders by seeking to modulate a range of targets. Companies pursuing microglia-targeted therapeutics include Janssen Pharmaceuticals, Inc., Alector Inc., Denali Therapeutics, Inc., Elixiron Therapeutics, Inc., Muna Therapeutics, Inc., Cognyx Pharmaceuticals, Inc., and CAMP4 Therapeutics Corporation, Inc.

Many of our competitors have significant financial, technical, manufacturing, marketing, sales and supply resources or experience. These competitors also compete with us in recruiting qualified scientific and management personnel as well as establishing clinical trial sites and patient registration for clinical trials, and in

acquiring new technologies. If we successfully obtain approval for any therapeutic candidate, we will face competition based on many different factors, including the safety and effectiveness of our therapeutics, the ease with which our therapeutics can be administered, the timing and scope of regulatory approvals for these products, the availability and cost of manufacturing, marketing and sales capabilities, price, reimbursement coverage and patent position. Competing products could present superior treatment alternatives, including by being more effective, safer, more convenient, less expensive or marketed and sold more effectively than any products we may develop. Competitive products or technological approaches may make any products we develop obsolete or noncompetitive before we recover the expense of developing and commercializing our therapeutic candidates. If we are unable to compete effectively, our opportunity to generate revenue from the sale of the therapeutics we may develop could be adversely affected.

Exclusive License Agreement with Amgen Inc.

In July 2020, we entered into an exclusive license agreement with Amgen Inc., pursuant to which we have been granted an exclusive, royalty-bearing license to certain intellectual property rights owned or controlled by Amgen, to commercially develop, manufacture, use, distribute and sell therapeutic products containing compounds that bind to TREM2. In particular, we have been granted licenses under patents filed in both the United States and foreign jurisdictions that are owned or controlled by Amgen, including an exclusive license under certain patents claiming compounds that bind to TREM2. Our exclusively licensed patents include, but are not limited to, patents claiming the composition of TREM2 agonist compounds and methods of using the same.

Pursuant to the terms of the license agreement, we must use commercially reasonable efforts to develop, manufacture, gain marketing authorization and commercialize at least one mAb product and at least one small molecule product in each of several major market territories. In addition, Amgen provided us, at its expense, consulting support in connection with the transfer of the licensed materials and the exploitation of the products. We are also entitled to sublicense the rights granted to us under the license agreement.

As initial consideration for the license, we paid an upfront payment of \$500,000 and also issued 6,928,566 shares of our Series A preferred stock to Amgen at the time of the initial closing with a subsequent 1,963,093 shares of our Series A preferred stock issued at the time of the milestone closing. As of November 30, 2021, Amgen owned approximately 15.08% of our outstanding shares of capital stock. As additional consideration for the license, we are required to pay Amgen up to \$80.0 million in the aggregate upon the achievement of specified regulatory milestones for the first mAb product and the first small molecule TREM2 agonist product and aggregate milestone payments of up to \$350.0 million upon the achievement of specific commercial milestones across all such mAb products and small molecule products. No regulatory or commercial milestones have been achieved to date under the license agreement. We are also required to pay tiered royalties of low to mid single-digit percentages on annual net sales of the products covered by the license. In the event that the exploitation of a Product is not covered by a valid claim within the licensed patent rights, then the royalty rate with respect to the net sales shall be subject to a customary reduction by a certain percentage. The royalty term will terminate on a country-by-country basis on the later of (i) the expiration date of the last valid claim within the licensed patent rights, and (ii) the tenth (10th) anniversary of the first commercial sale of such product in such country.

The license agreement expires upon the expiration of the last-to-expire royalty term for the products in the territory. Upon expiration of the license agreement, the licenses granted to us will be considered fully paid-up, irrevocable and non-exclusive. Either we or Amgen may terminate the license agreement if the other party commits a material breach of the agreement or defaults in the performance thereunder and fails to cure that breach within 90 days after written notice is provided or in the event of bankruptcy, insolvency, dissolution or winding up. Amgen has the right to terminate the license agreement in full upon written notice to us in the event we, our affiliates or sublicensees, directly challenge the patentability, enforceability or validity of any licensed patents, unless, in the event of a sublicensee challenge, we terminate the sublicense within 60 days' notice. Amgen has the right to terminate the license agreement in the event we do not elect to treat a distracting product (as defined in the license agreement) as a newly added product under the license agreement. We shall have the right to terminate the license agreement if we conclude, due to scientific, technical, regulatory or commercial reasons, that the exploitation of the products is no longer commercially practicable.

[Table of Contents](#)

In connection with the license agreement, Amgen entered into certain stockholder agreements related to this investment. See “Certain Relationships and Related Party Transactions.”

Master Services Agreement with FUJIFILM

In February 2021, we entered into a master services agreement with FUJIFILM Diosynth Biotechnologies UK Limited, FUJIFILM Diosynth Biotechnologies Texas, LLC, FUJIFILM Diosynth Biotechnologies U.S.A., Inc, and FUJIFILM Diosynth Biotechnologies Denmark ApS, or collectively, FUJIFILM, pursuant to which FUJIFILM provides research, development, testing and manufacturing services of certain of our product candidates, which are or will be designated as programs pursuant to scope of work agreements. The fees for such services are set out in each scope of work agreement. We may pay additional fees in consideration for certain research and development and technical consultancy services in relation to the procurement, testing and management of consumables; subcontracted work (including delivery of material to and from such subcontractors); process-specific equipment (including installation and qualification thereof); modifications; and special waste.

Either party may terminate the FUJIFILM Agreement by giving three months written notice to the other party, provided there are no uncompleted programs existing at the date such notice is given, or upon material breach that the breaching party cannot cure, does not cure within sixty (60) days if a breach for payment, or otherwise does not commence and diligently pursue a remedy within 60 days. Each scope of work will continue until the earlier of (i) the date the specified in the scope of work, or if no such date is specified, the date the program, or part of the program referred to in the scope of work, is completed, or (ii) termination of the master services agreement or the relevant scope of work. Additionally, upon providing written notice, we may cancel certain stages or programs for convenience, and FUJIFILM may terminate for certain unforeseen technical errors. We may also be required to pay FUJIFILM cancellation fees in the event that we decide to terminate the FUJIFILM Agreement pursuant to its terms, calculated as a percentage of the fees payable under the applicable scope of work agreement.

Intellectual Property

We actively seek to protect our proprietary technology, inventions, and other intellectual property that is commercially important to the development of our business by a variety of means, for example seeking, maintaining, and defending patent rights, whether developed internally or licensed from third parties. We also rely on trade secrets and know-how relating to our proprietary technology for our product candidates and on continuing technological innovation, and we may rely on in-licensing opportunities to develop, strengthen and maintain the strength of our position in the field of microglia-based therapeutics and TREM2 agonists that may be important for the development of our business. Our commercial success depends, in part, on our ability to obtain, maintain, enforce and protect our intellectual property and other proprietary rights for the technology, inventions and improvements and to defend any patents we may own or in-license in the future, prevent others from infringing any patents we may own or in-license in the future, preserve the confidentiality of our trade secrets, and operate without infringing, misappropriating or otherwise violating the valid and enforceable patents and proprietary rights of third parties.

Patent Protection

As with other biotechnology and pharmaceutical companies, our ability to maintain and solidify our proprietary and intellectual property position for our product candidates and technologies will depend on our success in obtaining effective patent claims and enforcing those claims if granted. However, our pending patent applications, and any patent applications that we may in the future file or license from third parties, may not result in the issuance of patents and any issued patents we may obtain do not guarantee us the right to practice our technology or commercialize our product candidates. We also cannot predict the breadth of claims that may be allowed or enforced in any patents we may own or in-license in the future. Any issued patents that we may own or in-license in the future may be challenged, invalidated, circumvented or have the scope of their claims

narrowed. In addition, because of the extensive time required for clinical development and regulatory review of a product candidate we may develop, it is possible that, before any of our product candidates can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thereby limiting the protection such patent would afford the respective product and any competitive advantage such patent may provide.

The term of individual patents depends upon the date of filing of the patent application, the date of patent issuance, and the legal term of patents in the countries in which they are obtained. In most countries, including the United States, the patent term is 20 years from the earliest filing date of a non-provisional patent application. In the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the USPTO in examining and granting a patent, or may be shortened if a patent is terminally disclaimed over an earlier expiring patent. The term of a U.S. patent claiming a new drug product may also be eligible for a limited patent term extension when FDA approval is granted, provided statutory and regulatory requirements are met. The term extension period granted on a U.S. patent covering a product is typically one-half the time between the effective date of a clinical investigation involving human beings is begun and the submission date of an application, plus the time between the submission date of an application and the ultimate approval date. The term extension period cannot be longer than five years, and the term extension period may not extend the patent term beyond 14 years from the date of FDA approval. The United States Patent and Trademark Office reviews and approves the application for any patent term extension in consultation with the FDA. In the future, if our product candidates receive approval by the FDA, we expect to apply for patent term extensions on any issued patents covering those products, depending upon the length of the clinical studies for each product and other factors. There can be no assurance that our pending patent applications, and any patent applications that we may in the future file or license from third parties, will issue or that we will benefit from any patent term extension or favorable adjustments to the terms of any patents we may own or in-license in the future. In addition, the actual protection afforded by a patent varies on a product-by-product basis, from country-to-country, and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory-related extensions, the availability of legal remedies in a particular country and the validity and enforceability of the patent. Patent term may be inadequate to protect our competitive position on our products for an adequate amount of time.

Our policy is to file patent applications to protect technology, inventions and improvements to inventions that may be commercially important to the development of our business. We seek patent protection in the United States and foreign countries for a variety of technologies, including our TREM2 agonist therapeutic product candidates, VGL101 and small molecule TREM2 agonists, methods for treating neurodegenerative diseases, and methods of selecting patient populations based on biomarkers.

VGL101

We have an exclusive license from Amgen to one patent family directed to VGL101 and other TREM2 antibodies, and this patent family contains a U.S. patent directed to compositions of matter, along with patent applications directed to compositions of matter and certain methods of their use. As of November 30, 2021, this family contains one U.S. patent, one pending U.S. continuation patent application, and patent applications in Europe, Japan, Australia, Canada, China and over 30 additional countries. The U.S. patent is scheduled to expire in 2038, and any foreign patents or additional U.S. patents that issue from these patent applications, if granted, are expected to expire in 2038; in each instance provided that all appropriate maintenance fees are paid and not including any patent term adjustment, patent term extension, or Supplementary Protection Certificate (SPC).

As of November 30, 2021, we also solely own two U.S. provisional patent applications and two patent applications in Greece directed to methods of treatment using a TREM2 antibody, such as VGL101, according to certain protocols. Any U.S. or foreign patents that issue based on these patent applications, if granted and all appropriate maintenance fees paid, are expected to expire in year 2042, not including any patent term adjustment, patent term extension, or SPC.

Small Molecule TREM2 Agonists

We solely own one patent family and jointly own with Amgen two patent families, each of which is directed to a first series of small molecule TREM2 agonist compositions of matter and methods of their use. We exclusively license Amgen's rights in the two jointly owned patent families. As of November 30, 2021, our solely owned patent family to small molecule TREM2 agonists contains two U.S. provisional patent applications, whereby any U.S. or foreign patents that issue based on these patent applications, if granted and all appropriate maintenance fees paid, are expected to expire in year 2042, not including any patent term adjustment, patent term extension, or SPC. As of November 30, 2021, the first jointly owned patent family to small molecule TREM2 agonists contains one international patent application, whereby any U.S. or foreign patents that issue from this patent application, if granted and all appropriate maintenance fees paid, are expected to expire in year 2041, not including any patent term adjustment, patent term extension, or SPC. Additionally, as of November 30, 2021, the second jointly owned patent family to small molecule TREM2 agonists contains one international patent application, one U.S. patent application, along with patent applications in Argentina and Taiwan, whereby any U.S. or foreign patents that issue from these patent applications, if granted and all appropriate maintenance fees paid, are expected to expire in year 2041, not including any patent term adjustment, patent term extension, or SPC.

In addition, as of November 30, 2021, we solely own three U.S. provisional patent applications directed to additional small molecule TREM2 agonist compositions of matter and methods of their use. Any U.S. or foreign patents that issue based on these patent applications, if granted and all appropriate maintenance fees paid, are expected to expire in year 2042, not including any patent term adjustment, patent term extension, or SPC.

TREM2 Agonists for CSF1R Dysfunction

We solely own one patent family directed to methods of treating diseases associated with CSF1R dysfunction using a TREM2 agonist, such as VGL101 or other TREM2 antibody. As of November 30, 2021, this family contains one international patent application, one U.S. patent application, and one patent application in Taiwan. Any U.S. or foreign patents that issue based on these patent applications, if granted and all appropriate maintenance fees paid, are expected to expire in year 2041, not including any patent term adjustment, patent term extension, or SPC.

Methods of Treatment & Biomarkers for Alzheimer's Disease

As of November 30, 2021, we exclusively license from Amgen two U.S. provisional patent applications directed to methods of treating AD using a TREM2 agonist, as well as methods for identifying a patient with AD who will benefit from treatment with a TREM2 agonist. Any U.S. or foreign patents that issue based on this patent application, if granted and all appropriate maintenance fees paid, are expected to expire in year 2041, not including any patent term adjustment, patent term extension, or SPC.

TREM2 Agonists for ABCD1 Dysfunction

As of November 30, 2021, we solely own one U.S. provisional patent application directed to methods of treating diseases associated with ABCD1 dysfunction using a TREM2 agonist. Any U.S. or foreign patents that issue based on these patent applications, if granted and all appropriate maintenance fees paid, are expected to expire in year 2041, not including any patent term adjustment, patent term extension, or SPC.

TREM2 Agonist Biomarkers

As of November 30, 2021, we solely own two U.S. provisional patent applications directed to methods of treating a disorder associated with microglial dysfunction in certain patients using a TREM2 agonist, as well as methods of identifying a patient with a condition associated with microglial dysfunction that will benefit from treatment with a TREM2 agonist. Any U.S. or foreign patents that issue based on this patent application, if granted and all appropriate maintenance fees paid, are expected to expire in year 2042, not including any patent term adjustment, patent term extension, or SPC.

Trade Secrets

We also rely on trade secrets, know-how, continuing technological innovation and confidential information to develop and maintain our proprietary position and protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection. We seek to protect our proprietary technology and processes, in part, by confidentiality agreements and invention assignment agreements with our employees, consultants, scientific advisors, contractors and others who may have access to proprietary information, under which they are bound to assign to us inventions made during the term of their employment or term of service. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems.

Commercialization

We do not currently have any approved drugs, and we do not expect to have any approved drugs in the near term. As a company, we do not have sales, marketing or commercial product distribution capabilities. We will evaluate all available options for commercialization of our potential therapies, if approved for commercialization by FDA and other relevant regulatory worldwide bodies. We may consider building out our own commercialization infrastructure in the United States, Europe, Asia and other geographies, entering into co-commercialization agreements with other biopharmaceutical companies with strong and proven commercial capabilities, and licensing select or all geographical rights for some or all of our therapies.

Manufacturing

We do not own or operate manufacturing facilities for the production of our drug candidates and currently have no plans to build our own clinical or commercial scale manufacturing capabilities. We rely, and expect to continue to rely, on third-party manufacturers to produce our product candidates for use in human clinical trials in compliance with FDA and other foreign regulatory requirements, and on contract development and manufacturing organizations (CDMOs) to manufacture and supply our preclinical and clinical materials.

VGL101 is a monoclonal antibody produced from a recombinant cell line. We have established non-exclusive relationships with CDMOs for the GMP manufacturing of VGL101 drug substance and drug product, and with other third parties for testing, fill finish, packaging and labeling. We have a license from Amgen Inc. for use of its proprietary cell lines and media, which we rely on for manufacturing VGL101. FUJIFILM is currently, and will be for the foreseeable future, the sole supplier of certain testing and manufacturing services for VGL101.

The small molecule compound we are developing is produced through chemical synthesis technology. We are currently in the process of selecting a development candidate to advance into clinical trials. Our selection of a development candidate, along with potential back up compounds, will be made not only on the basis of potential clinical activity and tolerability, but also on the relative ease and reproducibility of synthesis, reasonable cost of goods and ready availability of starting materials. We plan to retain a contract manufacturing organization to produce a small molecule agonist for clinical trials once we select a development candidate.

We do not have long-term supply agreements, and we purchase our required drug product on a development manufacturing services agreement or purchase order basis. We expect to continue to rely on third-party manufacturers for the commercial supply of any of our product candidates for which we obtain marketing approval. We have personnel with significant technical, manufacturing, analytical, quality, regulatory, including cGMP, and project management experience to oversee our third-party manufacturers and to manage manufacturing and quality data and information for regulatory compliance purposes.

Our product candidates for clinical trial use must be manufactured in compliance with cGMP regulations. The cGMP regulations include requirements relating to organization of personnel, buildings and facilities, equipment, control of components and drug product containers and closures, production and process controls, packaging and labeling controls, holding and distribution, laboratory controls, records and reports, and returned or salvaged products.

Government Regulation

Government authorities in the United States, at the federal, state and local level and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, testing, manufacture, pricing, reimbursement, sales, quality control, approval, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting and import and export of drugs and biological products such as those we are developing. The processes for obtaining marketing approvals in the United States and in foreign countries and jurisdictions, along with subsequent compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources.

Licensure and Regulation of Drugs and Biologics in the United States

In the United States, where we are initially focusing our product development, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act (FDCA), and biologics under the FDCA and the Public Health Service Act (PHSA), and their implementing regulations. Both drugs and biologics are also subject to other federal, state and local statutes and regulations. We are currently developing product candidates that would be regulated under the FDCA, and/or the PHSA, and their implementing regulations, as drugs or biologics, depending on the modality of each product candidate. Our product candidates are early-stage and have not been approved by the FDA for marketing in the United States.

An applicant seeking approval to market and distribute a new drug or biologic in the United States generally must satisfactorily complete each of the following steps:

- preclinical laboratory tests, animal studies and formulation studies all performed in accordance with the FDA's Good Laboratory Practices (GLP) regulations, as applicable;
- completion of the manufacture, under current Good Manufacturing Practices (cGMP) conditions, of the drug substance and drug product that the sponsor intends to use in human clinical trials along with required analytical and stability testing;
- submission to the FDA of an Investigational New Drug application (IND), for human clinical testing, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board (IRB), representing each clinical trial site before each clinical trial site may be initiated;
- performance of adequate and well-controlled human clinical trials, in accordance with current Good Clinical Practices (GCP) and any additional nonclinical studies required to establish the safety, efficacy, potency and purity of the product candidate for each proposed indication;
- preparation and submission to the FDA of a new drug application (NDA), or a Biologics License Application (BLA), for a biologic product, requesting marketing for one or more proposed indications, including submission of detailed information on the manufacture and composition of the product in clinical development and proposed labeling;
- review of the product by an FDA advisory committee, where appropriate or if applicable;
- satisfactory completion of one or more FDA inspections of the manufacturing facility or facilities, including those of third parties, at which the product, or components thereof, are produced to assess compliance with cGMP and to assure that the facilities, methods and controls are adequate to preserve the product's identity, strength, quality and purity;
- satisfactory completion of any FDA audits of the preclinical studies and clinical trial sites to assure compliance with GLP, as applicable, and GCP, and the integrity of clinical data in support of the NDA or BLA;
- payment of user fees under the Prescription Drug User Fee Act (PDUFA), unless exempted;
- securing FDA approval of the NDA or BLA; and

- compliance with any post-approval requirements, including the potential requirement to implement a Risk Evaluation and Mitigation Strategy (REMS) and any post-approval studies or other post-marketing commitments required by the FDA.

The failure to comply with the applicable U.S. requirements at any time during the product development process, including preclinical testing, clinical testing, the approval process, or post-approval process, may subject an applicant to delays in the conduct of the study, regulatory review and approval and/or administrative or judicial sanctions. These sanctions may include, but are not limited to, the FDA's refusal to allow an applicant to proceed with clinical testing, refusal to approve pending applications, license suspension or revocation, withdrawal of an approval, issuance of warning or untitled letters, adverse publicity, product recalls, marketing restrictions, product seizures, import detentions and refusals, total or partial suspension of production or distribution, injunctions, fines and civil or criminal investigations and penalties brought by the FDA or the Department of Justice (DOJ), and other governmental entities, including state agencies.

Preclinical Studies and Investigational New Drug Application

Before testing any therapeutic product candidate in humans, the product candidate must undergo preclinical testing. Preclinical tests include laboratory evaluations of product chemistry, formulation and stability, as well as studies to evaluate the potential for efficacy and toxicity in animal studies. The conduct of the preclinical tests and formulation of the compounds for testing must comply with federal regulations and requirements. The results of the preclinical tests, together with manufacturing information, analytical data, and plans for the proposed clinical studies, are submitted to the FDA as part of an IND. Some preclinical testing may continue after an IND is submitted.

An IND is an exemption from the FDCA that allows an unapproved product candidate to be shipped in interstate commerce for use in a clinical trial and a request for FDA authorization to administer such investigational product to humans. The IND automatically becomes effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions about the product or conduct of the proposed clinical trial, including concerns that human research subjects will be exposed to unreasonable health risks. In that case, the IND sponsor and the FDA must resolve any outstanding FDA concerns before the clinical trials can begin.

As a result, submission of the IND may result in the FDA not allowing the trials to commence or allowing the trial to commence on the terms originally specified by the sponsor in the IND. If the FDA raises concerns or questions either during this initial 30-day period, or at any time during the IND review process, it may choose to impose a partial or complete clinical hold. Clinical holds may be imposed by the FDA when there is concern for patient safety, and may be a result of new data, findings, or developments in clinical, preclinical and/or chemistry, manufacturing and controls or where there is non-compliance with regulatory requirements. This order issued by the FDA would delay either a proposed clinical trial or cause suspension of an ongoing trial, until all outstanding concerns have been adequately addressed and the FDA has notified the company that investigations may proceed. A separate submission to an existing IND must also be made for each successive clinical trial conducted during drug development, and the FDA must grant permission, either explicitly or implicitly by not objecting, before each clinical trial can begin.

Human Clinical Trials in Support of an NDA or BLA

Clinical trials involve the administration of the investigational product candidate to healthy volunteers or patients with the disease or condition to be treated under the supervision of qualified investigators in accordance with GCP requirements. Clinical trials are conducted under protocols detailing, among other things, the objectives of the trial, dosing procedures, inclusion and exclusion criteria, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND. Clinical testing also must satisfy extensive GCP rules and the requirements for informed consent.

[Table of Contents](#)

A sponsor who wishes to conduct a clinical trial outside the United States may, but need not, obtain FDA authorization to conduct the clinical trial under an IND. When a foreign clinical trial is conducted under an IND, all FDA IND requirements must be met unless waived. The FDA will accept a well-designed and well-conducted foreign clinical study not conducted under an IND if the study was conducted in accordance with GCP requirements, and the FDA is able to validate the data through an onsite inspection if deemed necessary. The GCP requirements encompass both ethical and data integrity standards for clinical trials. The FDA's regulations are intended to help ensure the protection of human subjects enrolled in non-IND foreign clinical trials, as well as the quality and integrity of the resulting data. They further help ensure that non-IND foreign trials are conducted in a manner comparable to that required for clinical trials in the United States.

Further, each clinical trial must be reviewed and approved by an IRB either centrally or individually at each institution at which the clinical trial will be conducted. The IRB will consider, among other things, clinical trial design, patient informed consent, ethical factors, the safety of human subjects and the possible liability of the institution. An IRB must operate in compliance with FDA regulations. The FDA, IRB, or the clinical trial sponsor may suspend or discontinue a clinical trial at any time for various reasons, including a finding that the clinical trial is not being conducted in accordance with GCP requirements or that the participants are being exposed to an unacceptable health risk.

Additionally, some clinical trials are overseen by an independent group of qualified experts organized by the clinical trial sponsor, known as a data safety monitoring board (DSMB), or data monitoring committee (DMC). This group may recommend continuation of the trial as planned, changes in trial conduct, or cessation of the trial at designated check points based on certain available data from the trial to which only the DSMB/DMC has access.

Clinical trials typically are conducted in three sequential phases, but the phases may overlap or be combined. Additional studies may be required after approval.

- Phase 1 clinical trials are initially conducted in a limited population of healthy subjects or disease-affected patients to test the product candidate for safety, including adverse effects, dose tolerance, absorption, metabolism, distribution, excretion and pharmacodynamics.
- Phase 2 clinical trials are generally conducted in a limited patient population to identify possible adverse effects and safety risks, evaluate the efficacy of the product candidate for specific targeted indications and determine dose tolerance and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more costly Phase 3 clinical trials.
- Phase 3 clinical trials typically proceed if the Phase 2 clinical trials demonstrate that a dose range of the product candidate is potentially effective and has an acceptable safety profile. Phase 3 clinical trials are generally undertaken within an expanded patient population to further evaluate dosage, provide substantial evidence of clinical efficacy and further test for safety in an expanded and diverse patient population at multiple, geographically dispersed clinical trial sites. A well-controlled, statistically robust Phase 3 trial may be designed to deliver the data that regulatory authorities will use to decide whether or not to approve, and, if approved, how to appropriately label a therapeutic.

In some cases, the FDA may approve an NDA or BLA for a product but require the sponsor to conduct additional clinical trials to further assess the product's safety and effectiveness after approval. Such post-approval trials are typically referred to as Phase 4 clinical trials. These studies are used to gain additional experience from the treatment of patients in the intended therapeutic indication and to document a clinical benefit for products approved under accelerated approval regulations. The failure to exercise due diligence with regard to conducting Phase 4 clinical trials could result in withdrawal of approval for products.

Information about applicable clinical trials must be submitted within specific timeframes to the NIH for public dissemination on its ClinicalTrials.gov website.

Progress reports detailing the results of the clinical trials, among other information, must be submitted at least annually to the FDA and written IND safety reports must be submitted to the FDA and the investigators for

[Table of Contents](#)

serious and unexpected suspected adverse events, findings from other studies or animal or *in vitro* testing that suggest a significant risk for human subjects and any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. The sponsor must submit an IND safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information.

Under the Pediatric Research Equity Act of 2003, an NDA, BLA or supplement thereto must contain data that are adequate to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDCA requires that a sponsor who is planning to submit a marketing application for a product that includes a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration submit an initial Pediatric Study Plan (PSP), within sixty days of an end-of-Phase 2 meeting or as may be agreed between the sponsor and FDA. Those plans must contain an outline of the proposed pediatric study or studies the applicant plans to conduct, including study objectives and design, any deferral or waiver requests and other information required by regulation. The sponsor and the FDA must reach agreement on the PSP. The FDA or the applicant may request an amendment to the plan at any time.

The FDA may, on its own initiative or at the request of the applicant, grant deferrals for submission of some or all pediatric data until after approval of the product for use in adults, or full or partial waivers from the pediatric data requirements. Additional requirements and procedures relating to deferral requests and requests for extension of deferrals are contained in the Food and Drug Administration Safety and Innovation Act. Unless otherwise required by regulation, the pediatric data requirements do not apply to products with orphan designation.

Compliance with cGMP Requirements

Concurrent with clinical trials, companies must finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product and, among other things, companies must develop methods for testing the identity, strength, quality and purity of the final product. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidates do not undergo unacceptable deterioration over their shelf life. Before approving an NDA or BLA, the FDA will typically inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. The PHSa emphasizes the importance of manufacturing controls for products like biologics whose attributes cannot be precisely defined.

Manufacturers and others involved in the manufacture and distribution of products must also register their establishments with the FDA and certain state agencies. Both domestic and foreign manufacturing establishments must register and provide additional information to the FDA upon their initial participation in the manufacturing process. Any product manufactured by or imported from a facility that has not registered, whether foreign or domestic, is deemed misbranded under the FDCA. Establishments may be subject to periodic unannounced inspections by government authorities to ensure compliance with cGMPs and other laws. Noncompliance with such requirements can lead to adverse findings by the FDA during these inspections; in instances of significant or continued noncompliance, such adverse findings can serve as the basis for additional regulatory action by the FDA, including but not limited to warning and "untitled" letters.

Review and Approval of an NDA or BLA

The results of product candidate development, preclinical testing and clinical trials, including negative or ambiguous results as well as positive findings, are submitted to the FDA as part of an NDA or BLA requesting

approval to market the product for one or more specified indications. The NDA or BLA must contain extensive manufacturing information and detailed information on the composition of the product and proposed labeling as well as payment of a user fee. Under federal law, the submission of most NDAs and BLAs are subject to an application user fee. The sponsor of an approved NDA or BLA is also subject to an annual program fee. Certain exceptions and waivers are available for some of these fees, such as an exception from the application fee for products with orphan designation and a waiver for certain small businesses.

The FDA has 60 days after submission of the application to conduct an initial review to determine whether to accept it for filing based on the agency's threshold determination that it is sufficiently complete to permit substantive review. If the submission has been accepted for filing, the FDA begins an in-depth review of the application. Under the goals and policies agreed to by the FDA under PDUFA, the FDA has ten months in which to complete its initial review of a standard application and respond to the applicant, and six months for a priority review of the application. The FDA does not always meet its PDUFA goal dates for standard and priority NDAs and BLAs. The review process may be significantly extended by FDA requests for additional information or clarification. The review process and the PDUFA goal date may be extended by three months if the FDA requests or if the applicant otherwise provides additional information or clarification regarding information already provided in the submission within the last three months before the PDUFA goal date.

The FDA reviews an NDA or BLA to determine, among other things, whether the product is safe and effective and whether the facility in which it is manufactured, processed, packaged or held meets standards designed to assure the product's continued safety, quality and purity. The FDA likely will reanalyze the clinical trial data, which could result in extensive discussions between the FDA and the applicant during the review process. On the basis of the FDA's evaluation of the application and accompanying information, including the results of the inspection of the manufacturing facilities and any FDA audits of preclinical and clinical trial sites to assure compliance with GCPs, the FDA may issue an approval letter or a complete response letter. An approval letter authorizes commercial marketing of the product with specific prescribing information for specific indications. If the application is not approved, the FDA will issue a complete response letter, which will contain the conditions that must be met in order to secure final approval of the application, and when possible, will outline recommended actions the sponsor might take to obtain approval of the application. The complete response letter may require additional clinical data and/or other significant and time-consuming requirements related to clinical trials, preclinical studies or manufacturing. Sponsors that receive a complete response letter have one year to submit to the FDA information that represents a complete response to the deficiencies identified by the FDA. The FDA will then re-review the application, taking into consideration the response, and determine whether the application meets the criteria for approval. Failure to respond to a complete response letter will serve as a withdrawal of an application. The FDA will not approve an application until issues identified in any complete response letters have been addressed.

The FDA may refer applications for novel products or products that present difficult questions of safety or efficacy to an advisory committee.

Typically, an advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates and provides a recommendation as to whether the application should be approved and under what conditions, if any. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

If the FDA approves a new product, it may limit the approved indication(s) for use of the product. It may also require that contraindications, warnings, or precautions be included in the product labeling. In addition, the FDA may require post-approval studies, including Phase 4 clinical trials, to further assess the product's efficacy and/or safety after approval. The agency may also require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, including a REMS program, to help ensure that the benefits of the product outweigh the potential risks. A REMS can include medication guides, communication plans for healthcare professionals and elements to assure safe use (ETASU). ETASU can include, but are not limited to, special training or

certification for prescribing or dispensing, dispensing only under certain circumstances, special monitoring and the use of patent registries. The FDA may prevent or limit further marketing of a product based on the results of post-market studies or surveillance programs. After approval, many types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

Fast Track, Breakthrough Therapy and Priority Review Designations

FDA provides programs intended to facilitate and expedite development and review of new products that are intended to address an unmet medical need in the treatment of a serious or life-threatening disease or condition. These programs are referred to as fast track designation, breakthrough therapy designation and priority review designation. These designations are not mutually exclusive, and a product candidate may qualify for one or more of these programs. While these programs are intended to expedite product development and approval, they do not alter the standards for FDA approval.

The FDA may designate a product for fast track designation if it is intended, whether alone or in combination with one or more other products, for the treatment of a serious or life-threatening disease or condition, and it demonstrates the potential to address unmet medical needs for such a disease or condition. For products with fast track designation, sponsors may have more frequent interactions with the FDA, the product is potentially eligible for accelerated approval and priority review, if relevant criteria are met, and the FDA may initiate review of sections of a product with fast track designation's application before the application is complete. This rolling review may be available if the FDA determines, after preliminary evaluation of clinical data submitted by the sponsor, that a product with fast track designation may be effective. The sponsor must also provide, and the FDA must approve, a schedule for the submission of the remaining information and the sponsor must pay applicable user fees. However, the FDA's time period goal for reviewing a fast track application does not begin until the last section of the application is submitted. In addition, the fast track designation may be withdrawn by the FDA if the FDA believes that the designation is no longer supported by data emerging in the clinical trial process.

A product may be designated as a breakthrough therapy if it is intended, either alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The FDA may take certain actions with respect to breakthrough therapies, including holding meetings with the sponsor throughout the development process; providing timely advice to the product sponsor regarding development and approval; involving more senior staff managers in the review process; assigning a cross-disciplinary lead for the review team; and taking other steps to design the clinical trials in an efficient manner. Breakthrough designation may be rescinded if a product no longer meets the qualifying criteria.

The FDA may designate a product for priority review if it is a product that treats a serious condition and, if approved, would provide a significant improvement in safety or effectiveness when compared with other available therapies. Significant improvement may be illustrated by evidence of increased effectiveness in the treatment of a condition, elimination or substantial reduction of a treatment-limiting adverse reaction, documented enhancement of patient compliance that may lead to improvement in serious outcomes and evidence of safety and effectiveness in a new subpopulation. A priority review designation is intended to direct overall attention and resources to the evaluation of such applications, and to shorten the FDA's goal for taking action on a marketing application from ten months to six months. Priority review designation may be rescinded if a product no longer meets the qualifying criteria.

Accelerated Approval Pathway

The FDA may grant accelerated approval to a product for a serious or life-threatening condition that provides meaningful therapeutic advantage to patients over existing treatments based upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit. For the

purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign, or other measure that is thought to predict clinical benefit but is not itself a measure of clinical benefit. The FDA may also grant accelerated approval for such a condition when the product has an effect on an intermediate clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality (IMM), and that is reasonably likely to predict an effect on IMM or other clinical benefit, taking into account the severity, rarity or prevalence of the condition and the availability or lack of alternative treatments. The FDA has limited experience with accelerated approvals based on intermediate clinical endpoints but has indicated that such endpoints generally may support accelerated approval where the therapeutic effect measured by the endpoint is not itself a clinical benefit and basis for traditional approval, if there is a basis for concluding that the therapeutic effect is reasonably likely to predict the ultimate clinical benefit of a product. Products granted accelerated approval must meet the same statutory standards for safety and effectiveness as those granted traditional approval.

The accelerated approval pathway is most often used in settings in which the course of a disease is long, and an extended period of time is required to measure the intended clinical benefit of a product, even if the effect on the surrogate or intermediate clinical endpoint occurs rapidly. The accelerated approval pathway is usually contingent on a sponsor's agreement to conduct, in a diligent manner, additional post-approval confirmatory studies to verify and describe the product's clinical benefit. As a result, a product candidate approved on this basis is subject to rigorous post-marketing compliance requirements, including the completion of Phase 4 or post-approval clinical trials to confirm the effect on the clinical endpoint. Failure to conduct required post-approval studies, confirm a clinical benefit during post-marketing studies or dissemination of false or misleading promotional materials would allow the FDA to withdraw the product from the market on an expedited basis. All promotional materials for therapeutic candidates approved under accelerated regulations are subject to prior review by the FDA.

Orphan Drug Designation

Orphan drug designation in the United States is designed to encourage sponsors to develop products intended for treatment of rare diseases or conditions. In the United States, a rare disease or condition is statutorily defined as a condition that affects fewer than 200,000 individuals in the United States or that affects 200,000 or more individuals in the United States and for which there is no reasonable expectation that the cost of developing and making available the drug or biologic for the disease or condition will be recovered from sales of the product in the United States.

Orphan drug designation qualifies a company for tax credits and market exclusivity for seven years following the date of the product's marketing approval if granted by the FDA. An application for designation as an orphan product can be made any time prior to the filing of an application for approval to market the product. After FDA grants orphan designation, the product must then go through the review and approval process like any other product.

A sponsor may request orphan drug designation of a previously unapproved product or new orphan indication for an already marketed product. In addition, a sponsor of a product that is otherwise the same product as an already approved orphan drug may seek and obtain orphan drug designation for the subsequent product for the same rare disease or condition if it can present a plausible hypothesis that its product may be clinically superior to the first drug. More than one sponsor may receive orphan drug designation for the same product for the same rare disease or condition, but each sponsor seeking orphan drug designation must file a complete request for designation.

If a product with orphan designation receives the first FDA approval for the disease or condition for which it has such designation or for a select indication or use within the rare disease or condition for which it was designated, the product generally will receive orphan drug exclusivity. Orphan drug exclusivity means that the FDA may not approve another sponsor's marketing application for the same product for the same indication for seven years, except in certain limited circumstances. If a product designated as an orphan drug ultimately receives marketing approval for an indication broader than what was designated in its orphan drug application, it may not be entitled to exclusivity.

The period of exclusivity begins on the date that the marketing application is approved by the FDA and applies only to the indication for which the product has been designated. The FDA may approve a second application for the same product for a different use or a second application for a clinically superior version of the product for the same use. The FDA cannot, however, approve the same product made by another manufacturer for the same indication during the market exclusivity period unless it has the consent of the sponsor, or the sponsor is unable to provide sufficient quantities.

Pediatric Exclusivity

Pediatric exclusivity is another type of non-patent marketing exclusivity in the United States and, if granted, provides for the attachment of an additional six months of marketing protection to the term of any existing regulatory exclusivity, including orphan exclusivity. This six-month exclusivity may be granted if an NDA or BLA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show the product to be effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity that cover the product are extended by six months.

U.S. Patent Term Restoration and Extension and Marketing Exclusivity

In the United States, a patent claiming a new drug or biologic product, its method of use or its method of manufacture may be eligible for a limited patent term extension under the Hatch-Waxman Act, which permits a patent extension of up to five years for patent term lost during product development and FDA regulatory review. Assuming grant of the patent for which the extension is sought, the restoration period for a patent covering a product is typically one-half the time between the effective date of the IND and the submission date of the NDA or BLA, plus the time between the submission date of the NDA or BLA and the ultimate approval date, except that the review period is reduced by any time during which the applicant failed to exercise due diligence. Patent term restoration cannot be used to extend the remaining term of a patent past a total of 14 years from the product's approval date in the United States. Only one patent applicable to an approved product is eligible for the extension, and the application for the extension must be submitted prior to the expiration of the patent for which extension is sought. A patent that covers multiple products for which approval is sought can only be extended in connection with one of the approvals. The USPTO reviews and approves the application for any patent term extension in consultation with the FDA.

Marketing exclusivity provisions under the FDCA also can delay the submission or the approval of certain applications. The FDCA provides a five-year period of non-patent marketing exclusivity within the United States to the first applicant to gain approval of an NDA for a new chemical entity. A drug is a new chemical entity if the FDA has not previously approved any other new drug containing the same active moiety, which is the molecule or ion responsible for the action of the drug substance. During the exclusivity period, the FDA may not accept for review an abbreviated new drug application (ANDA), or a 505(b)(2) NDA submitted by another company for another version of such drug where the applicant does not own or have a legal right of reference to all the data required for approval. However, an application may be submitted after four years if it contains a certification of patent invalidity or non-infringement. The FDCA also provides three years of marketing exclusivity for an NDA, 505(b)(2) NDA or supplement to an existing NDA if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by the FDA to be essential to the approval of the application, for example, new indications, dosages or strengths of an existing drug. This three-year exclusivity covers only the conditions of use associated with the new clinical investigations and does not prohibit the FDA from approving ANDAs for drugs containing the original active agent. Five-year and three-year exclusivity will not delay the submission or approval of a full NDA. However, an applicant submitting a full NDA would be required to conduct or obtain a right of reference to all of the preclinical studies and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness.

Biosimilars and Exclusivity

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or, collectively, the ACA, which was signed into law in March 2010, included a subtitle called the Biologics Price Competition and Innovation Act of 2009 (BPCIA). The BPCIA established a regulatory scheme authorizing the FDA to approve biosimilars and interchangeable biosimilars. A biosimilar is a biological product that is highly similar to an existing FDA-licensed “reference product.” The FDA has issued multiple guidance documents outlining an approach to review and approval of biosimilars. Under the BPCIA, a manufacturer may submit an application for licensure of a biologic product that is “biosimilar to” or “interchangeable with” a previously approved biological product or “reference product.” In order for the FDA to approve a biosimilar product, it must find that there are no clinically meaningful differences between the reference product and proposed biosimilar product in terms of safety, purity and potency. For the FDA to approve a biosimilar product as interchangeable with a reference product, the agency must find that the biosimilar product can be expected to produce the same clinical results as the reference product, and (for products administered multiple times) that the biologic and the reference biologic may be switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic.

Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date of approval of the reference product. The FDA may not approve a biosimilar product until 12 years from the date on which the reference product was approved. Even if a product is considered to be a reference product eligible for exclusivity, another company could market a competing version of that product if the FDA approves a full BLA for such product containing the sponsor’s own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products. At this juncture, it is unclear whether products deemed “interchangeable” by the FDA will, in fact, be readily substituted by pharmacies, which are governed by state pharmacy law. Since the passage of the BPCIA, many states have passed laws or amendments to laws, including laws governing pharmacy practices, which are state regulated, to regulate the use of biosimilars.

Post-Approval Regulation

If regulatory approval for a product or new indication for an existing product is obtained, the sponsor will be required to comply with all post-approval regulatory requirements as well as any specific post-approval requirements that the FDA have imposed as part of the approval process. The sponsor will be required to report certain adverse reactions and production problems to the FDA, provide updated safety and efficacy information and comply with requirements concerning advertising and promotional labeling requirements and record-keeping requirements. Manufacturers and certain of their subcontractors are required to register their establishments with the FDA and certain state agencies and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with ongoing regulatory requirements, including cGMP regulations, which impose certain procedural and documentation requirements upon manufacturers. Accordingly, the sponsor and its third-party manufacturers must continue to expend time, money and effort in the areas of production and quality control to maintain compliance with cGMP regulations and other regulatory requirements.

A biological product may also be subject to official lot release, meaning that the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official lot release, the manufacturer must submit samples of each lot, together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer’s tests performed on the lot, to the FDA. The FDA may in addition perform certain confirmatory tests on lots of some products before releasing the lots for distribution. Finally, the FDA will conduct laboratory research related to the safety, purity, potency and effectiveness of pharmaceutical products.

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later

[Table of Contents](#)

discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical trials to assess new safety risks; or imposition of distribution or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product;
- complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical trials;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;
- product recall, seizure or detention, or refusal to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates the marketing, labeling, advertising and promotion of prescription drug products placed on the market. This regulation includes, among other things, standards and regulations for direct-to-consumer advertising, communications regarding unapproved uses, industry-sponsored scientific and educational activities and promotional activities involving the internet and social media. Promotional claims about a drug's safety or effectiveness are prohibited before the drug is approved. After approval, a drug product generally may not be promoted for uses or patient populations that are not approved by the FDA, as reflected in the product's prescribing information (known as "off-label" use). In the United States, healthcare professionals are generally permitted to prescribe drugs for such off-label uses because the FDA does not regulate the practice of medicine. However, FDA regulations impose rigorous restrictions on manufacturers' communications, prohibiting the promotion of off-label uses. Prescription drug and biologic promotional materials must be submitted to the FDA in conjunction with their first use.

If a company, including any agent of the company or anyone speaking on behalf of the company, is found to have promoted off-label uses, the company may become subject to adverse public relations and administrative and judicial enforcement by the FDA, the DOJ, or the Office of the Inspector General of the Department of Health and Human Services, as well as state authorities. This could subject a company to a range of penalties that could have a significant commercial impact, including civil and criminal fines and agreements that materially restrict the manner in which a company promotes or distributes drug products. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed.

Federal and State Data Privacy and Security Laws

Under the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), the U.S. Department of Health and Human Services (HHS), has issued regulations to protect the privacy and security of protected health information (PHI), used or disclosed by covered entities including certain healthcare providers, health plans and healthcare clearinghouses. HIPAA also regulates standardization of data content, codes and formats used in healthcare transactions and standardization of identifiers for health plans and providers. HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 or HITECH, and their regulations, including the final omnibus rule published on January 25, 2013, also imposes certain obligations on the business associates of covered entities that obtain protected health information in providing services to or on behalf of covered entities. In addition to federal privacy regulations, there are a number of state laws governing confidentiality and security of health information that are applicable to our business. In addition to possible federal administrative, civil and criminal penalties for HIPAA violations, state attorneys general are authorized to file civil actions for damages or injunctions in federal courts to enforce HIPAA and seek attorney's

[Table of Contents](#)

fees and costs associated with pursuing federal civil actions. Accordingly, state attorneys general have brought civil actions seeking injunctions and damages resulting from alleged violations of HIPAA's privacy and security rules. New laws and regulations governing privacy and security may be adopted in the future as well.

Additionally, states, such as California, Virginia and Colorado have recently enacted the consumer privacy laws that grant rights to data subjects and place increased privacy and security obligations on entities handling personal data of consumers or households. While we are not currently subject to laws such as the California Consumer Privacy Act (CCPA), some observers note that the CCPA and similar legislation could mark the beginning of a trend toward more stringent privacy legislation in the U.S., which could increase our potential liability and adversely affect our business.

Because of the breadth of these laws and the narrowness of the statutory exceptions under such laws, it is possible that some of our current or future business activities, including certain clinical research, sales and marketing practices and the provision of certain items and services to our customers, could be subject to challenge under one or more of such privacy and data security laws. The heightening compliance environment and the need to build and maintain robust and secure systems to comply with different privacy compliance and/or reporting requirements in multiple jurisdictions could increase the possibility that we may fail to comply fully with one or more of these requirements. If our operations are found to be in violation of any applicable privacy or data security laws or regulations, we may be subject to penalties, including potentially significant criminal, civil and administrative penalties, damages, fines, imprisonment, contractual damages, reputational harm, diminished profits and future earnings, additional reporting requirements and/or oversight if we become subject to a consent decree or similar agreement to resolve allegations of non-compliance with these laws, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. To the extent that we collect or otherwise process personal information, we may be subject to privacy or data protection laws that are in effect in such third countries foreign laws.

Regulation and Procedures Governing Approval of Medicinal Products Outside the United States

In order to market any product outside of the United States, a company must also comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of products. Whether or not it obtains FDA approval for a product, an applicant will need to obtain the necessary approvals by the comparable foreign regulatory authorities before it can commence clinical trials or marketing of the product in those countries or jurisdictions. For example, the process governing approval of medicinal products in the European Union generally follows the same lines as in the United States. It entails satisfactory completion of preclinical studies and adequate and well-controlled clinical trials to establish the safety and efficacy of the product for each proposed indication. It also requires the submission to the relevant competent authorities of a marketing authorization application (MAA) and granting of a marketing authorization by these authorities before the product can be marketed and sold in the European Union.

Clinical Trial Approval

Pursuant to the currently applicable Clinical Trials Directive 2001/20/EC and the Directive 2005/28/EC on GCP, a system for the approval of clinical trials in the European Union has been implemented through national legislation of the member states. Under this system, an applicant must obtain approval from the national competent authority of a European Union member state in which the clinical trial is to be conducted, or in multiple member states if the clinical trial is to be conducted in a number of member states. Furthermore, the applicant may only start a clinical trial at a specific site after an independent ethics committee has issued a favorable opinion. The clinical trial application must be accompanied by an investigational medicinal product dossier with supporting information prescribed by Directive 2001/20/EC and Directive 2005/28/EC and corresponding national laws of the member states. All suspected unexpected serious adverse reactions to the investigated drug that occur during the clinical trial have to be reported to the national competent authorities and ethics committees of the member state where they occurred.

In April 2014, the European Union adopted a new Clinical Trials Regulation (EU) No 536/2014 (CTR), which is set to replace the current Clinical Trials Directive. It is expected that the CTR will become fully applicable at the end of January 2022. It will overhaul the current system of approvals for clinical trials in the European Union. Specifically, the new legislation, which will be directly applicable in all member states, aims at simplifying and streamlining the approval of clinical trials in the European Union, simplifying adverse-event reporting procedures, improving the supervision of clinical trials and increasing their transparency. For instance, the CTR provides for a streamlined application procedure via a single-entry point and strictly defined deadlines for the assessment of clinical trial applications. Parties conducting certain clinical trials must, as in the United States, post clinical trial information in the European Union at the EudraCT website: <https://eudract.ema.europa.eu>.

PRIME Designation in the European Union

In March 2016, the European Medicines Agency (EMA) launched an initiative to facilitate development of therapeutic candidates in indications, often rare, for which few or no therapies currently exist. The PRiority MEdicines (PRIME), scheme is intended to encourage drug development in areas of unmet medical need and provides accelerated assessment of products representing substantial innovation reviewed under the centralized procedure. Eligible products must target conditions for which there is an unmet medical need (there is no satisfactory method of diagnosis, prevention or treatment in the European Economic Area (EEA) or, if there is, the new medicine will bring a major therapeutic advantage) and they must demonstrate the potential to address the unmet medical need by introducing new methods of therapy or improving existing ones. Products from small- and medium-sized enterprises may qualify for earlier entry into the PRIME scheme than larger companies. Many benefits accrue to sponsors of therapeutic candidates with PRIME designation, including but not limited to, early and proactive regulatory dialogue with the EMA, frequent discussions on clinical trial designs and other development program elements, and accelerated marketing authorization application assessment once a dossier has been submitted. Importantly, a dedicated EMA contact and rapporteur from the Committee for Human Medicinal Products (CHMP), or Committee for Advanced Therapies are appointed early in the PRIME scheme facilitating increased understanding of the product at the EMA's Committee level. A kick-off meeting initiates these relationships and includes a team of multidisciplinary experts at the EMA to provide guidance on the overall development and regulatory strategies. Where, during the course of development, a medicine no longer meets the eligibility criteria, support under the PRIME scheme may be withdrawn.

Marketing Authorization

To obtain a marketing authorization for a product under the European Union regulatory system, an applicant must submit an MAA, either under a centralized procedure administered by the EMA or one of the procedures administered by competent authorities in European Union member states (decentralized procedure, national procedure, or mutual recognition procedure). A marketing authorization may be granted only to an applicant established in the European Union. Regulation (EC) No 1901/2006 provides that prior to obtaining a marketing authorization in the European Union, an applicant must demonstrate compliance with all measures included in an EMA-approved Pediatric Investigation Plan (PIP), covering all subsets of the pediatric population, unless the EMA has granted a product-specific waiver, class waiver or a deferral for one or more of the measures included in the PIP. The Paediatric Committee of the EMA (PDCO), may grant deferrals for some medicines, allowing a company to delay development of the medicine for children until there is enough information to demonstrate its effectiveness and safety in adults. The PDCO may also grant waivers when development of a medicine for children is not needed or is not appropriate, such as for diseases that only affect the elderly population. The respective requirements for all marketing authorization procedures are laid down in Regulation (EC) No 1901/2006, the so-called Paediatric Regulation. This requirement also applies when a company wants to add a new indication, pharmaceutical form or route of administration for a medicine that is already authorized. Products that are granted a marketing authorization with the results of the pediatric clinical trials conducted in accordance with the PIP (even where such results are negative) are eligible for six months' supplementary protection certificate extension. In the case of orphan medicinal products, a two-year extension of the orphan

market exclusivity may be available. This pediatric reward is subject to specific conditions and is not automatically available when data in compliance with the PIP are developed and submitted.

The centralized procedure provides for the grant of a single marketing authorization by the European Commission that is valid for all European Union member states, as well as the additional member states of the European Economic Area (Norway, Iceland and Liechtenstein) (EEA). Pursuant to Regulation (EC) No. 726/2004, the centralized procedure is compulsory for specific products, including for medicines produced by certain biotechnological processes, products designated as orphan medicinal products, advanced therapy medicinal products (gene-therapy, somatic cell-therapy or tissue-engineered medicines) and products with a new active substance indicated for the treatment of certain diseases, including products for the treatment of cancer, HIV / AIDS, neurodegenerative disorders, diabetes, auto-immune and other immune dysfunctions and viral diseases. The centralized procedure is optional for products containing a new active substance not yet authorized in the European Union, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the European Union. Manufacturers must demonstrate the quality, safety and efficacy of their products to the EMA, which provides an opinion regarding the MAA. The European Commission grants or refuses marketing authorization in light of the opinion delivered by the EMA.

Under the centralized procedure, the CHMP established at the EMA is responsible for conducting an initial assessment of a product. The maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops when additional information or written or oral explanation is to be provided by the applicant in response to questions of the CHMP. Clock stops may extend the timeframe of evaluation of an MAA considerably beyond 210 days. Where the CHMP gives a positive opinion, the EMA provides the opinion together with supporting documentation to the European Commission, who make the final decision to grant a marketing authorization, which is issued within 67 days of receipt of the EMA's recommendation. Accelerated evaluation may be granted by the CHMP in exceptional cases, when a medicinal product is of major interest from the point of view of public health and, in particular, from the viewpoint of therapeutic innovation. If the CHMP accepts such a request, the time limit of 210 days will be reduced to 150 days (excluding clock stops), but it is possible that the CHMP may revert to the standard time limit for the centralized procedure if it determines that it is no longer appropriate to conduct an accelerated assessment.

National marketing authorizations, which are issued by the competent authorities of the member states of the EEA and only cover their respective territory, are available for products not falling within the mandatory scope of the centralized procedure. Where a product has already been authorized for marketing in a member state of the EEA, this national authorization can be recognized in other member states through the mutual recognition procedure. If the product has not received a national authorization in any member state at the time of application, it can be approved simultaneously in various member states through the decentralized procedure.

Now that the UK (which comprises Great Britain and Northern Ireland) has left the European Union, Great Britain will no longer be covered by centralized marketing authorizations (under the Northern Irish Protocol, centralized marketing authorizations will continue to be recognized in Northern Ireland). All medicinal products with a current centralized marketing authorization were automatically converted to Great Britain marketing authorizations on January 1, 2021. For a period of two years from January 1, 2021, the Medicines and Healthcare Products Regulatory Agency (MHRA), the UK medicines regulator, may rely on a decision taken by the European Commission on the approval of a new marketing authorization in the centralized procedure, in order to more quickly grant a new Great Britain marketing authorization. A separate application will, however, still be required.

Regulatory Data Protection in the European Union

In the European Union, new chemical entities (including both small molecules and biological medicinal products) approved on the basis of a complete independent data package qualify for eight years of data exclusivity upon marketing authorization and an additional two years of market exclusivity pursuant to Regulation (EC) No 726/2004, as amended, and Directive 2001/83/EC, as amended. Data exclusivity, if granted,

prevents generic or biosimilar applicants from referencing the innovator's pre-clinical and clinical trial data contained in the dossier of the reference product when applying for a generic or biosimilar marketing authorization, for a period of eight years from the date on which the reference product was first authorized in the European Union. During the additional two-year period of market exclusivity, a generic or biosimilar marketing authorization application can be submitted, and the innovator's data may be referenced, but no medicinal product can be marketed until the expiration of the market exclusivity. The overall ten-year period will be extended to a maximum of eleven years if, during the first eight years of those ten years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to authorization, is held to bring a significant clinical benefit in comparison with existing therapies. Even if a compound is considered to be a new chemical entity so that the innovator gains the prescribed period of data exclusivity, another company may market another version of the product if such company obtained marketing authorization based on an MAA with a complete independent data package of pharmaceutical tests, preclinical tests and clinical trials.

Patent Term Extensions in the European Union and Other Jurisdictions

The European Union also provides for patent term extension through SPCs. The rules and requirements for obtaining a SPC are similar to those in the United States. An SPC may extend the term of a patent for up to five years after its originally scheduled expiration date and can provide up to a maximum of fifteen years of marketing exclusivity for a drug. In certain circumstances, these periods may be extended for six additional months if pediatric exclusivity is obtained; and in the case of orphan medicinal products, a two-year extension of the orphan market exclusivity may be available. Although SPCs are available throughout the European Union, sponsors must apply on a country-by-country basis. Similar patent term extension rights exist in certain other foreign jurisdictions outside the European Union.

Periods of Authorization and Renewals

A marketing authorization is valid for five years, in principle, and it may be renewed indefinitely after five years on the basis of a reevaluation of the risk-benefit balance by the EMA or by the competent authority of the authorizing member state. To that end, the marketing authorization holder must provide the EMA or the competent authority with a consolidated version of the file in respect of quality, safety and efficacy, including all variations introduced since the marketing authorization was granted, at least six months before the marketing authorization ceases to be valid. Once renewed, the marketing authorization is valid for an unlimited period, unless the European Commission or the competent authority decides, on justified grounds relating to pharmacovigilance, to proceed with one additional five-year renewal period. Any authorization that is not followed by the placement of the drug on the European Union market (in the case of the centralized procedure) or on the market of the authorizing member state (in the case of a national procedure) within three years after authorization, or which is not placed on the market for a consecutive period of three years at any time during its authorization, ceases to be valid.

Regulatory Requirements After Marketing Authorization

Following approval, the holder of the marketing authorization is required to comply with a range of requirements applicable to the manufacturing, marketing, promotion and sale of the medicinal product, and must adhere in strict compliance with the applicable European Union laws, regulations and guidance, including Directive 2001/83/EC, Directive 2003/94/EC, Regulation (EC) No 726/2004 and the European Commission Guidelines for Good Manufacturing Practice. These include compliance with the European Union's stringent pharmacovigilance or safety reporting rules, pursuant to which post-authorization studies and additional monitoring obligations can be imposed. In addition, the manufacturing of authorized products, for which a separate manufacturer's license is mandatory, must also be conducted in strict compliance with the EMA's GMP requirements and comparable requirements of other regulatory bodies in the European Union, which mandate the methods, facilities and controls used in manufacturing, processing and packing of drugs to assure their safety and identity.

Much like the Anti-Kickback Statute prohibition in the United States, the provision of benefits or advantages to physicians to induce or encourage the prescription, recommendation, endorsement, purchase, supply, order or use of medicinal products is also prohibited in the European Union. The provision of benefits or advantages to induce or reward improper performance generally is usually governed by the national anti-bribery laws of European Union member states and the Bribery Act 2010 in the UK. Infringement of these laws could result in substantial fines and imprisonment. EU Directive 2001/83/EC, which is the EU Directive governing medicinal products for human use, further provides that, where medicinal products are being promoted to persons qualified to prescribe or supply them, no gifts, pecuniary advantages or benefits in kind may be supplied, offered or promised to such persons unless they are inexpensive and relevant to the practice of medicine or pharmacy. This provision has been transposed into the Human Medicines Regulations 2012 and so remains applicable in the UK despite its departure from the European Union.

Payments made to physicians in certain European Union member states must be publicly disclosed. Moreover, agreements with physicians often must be the subject of prior notification and approval by the physician's employer, his or her competent professional organization and/or the regulatory authorities of the individual EU member states. These requirements are provided in the national laws, industry codes or professional codes of conduct, applicable in the EU member states. Failure to comply with these requirements could result in reputational risk, public reprimands, administrative penalties, fines or imprisonment.

The advertising and promotion of medicinal products is also subject to laws concerning promotion of medicinal products, interactions with physicians, misleading and comparative advertising and unfair commercial practices. All advertising and promotional activities for the product must be consistent with the approved summary of product characteristics, and therefore all off-label promotion is prohibited. Direct-to-consumer advertising of prescription medicines is also prohibited in the European Union. Although general requirements for advertising and promotion of medicinal products are established under European Union directives, the details are governed by regulations in each member state and can differ from one country to another.

Orphan Drug Designation and Exclusivity

Regulation (EC) No 141/2000 and Regulation (EC) No. 847/2000 provide that a product can be designated as an orphan drug by the European Commission if its sponsor can establish that the product is intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition, where either (i) such condition affects not more than five in ten thousand persons in the European Union when the application is made, or (ii) without incentives it is unlikely that the marketing of the drug in the European Union would generate sufficient return to justify the necessary investment in its development. For either of these conditions, the applicant must demonstrate that there exists no satisfactory method of diagnosis, prevention or treatment of the condition in question that has been authorized in the European Union or, if such method exists, the drug will be of significant benefit to those affected by that condition.

An orphan drug designation provides a number of benefits, including fee reductions, regulatory assistance and the possibility to apply for a centralized European Union marketing authorization. Marketing authorization for an orphan drug leads to a ten-year period of market exclusivity being granted following marketing approval of the orphan product. During this market exclusivity period, the EMA, the European Commission or the member states may only grant marketing authorization to a "similar medicinal product" for the same therapeutic indication if: (i) a second applicant can establish that its product, although similar to the authorized product, is safer, more effective or otherwise clinically superior; (ii) the marketing authorization holder for the authorized product consents to a second orphan medicinal product application; or (iii) the marketing authorization holder for the authorized product cannot supply enough orphan medicinal product. A "similar medicinal product" is defined as a medicinal product containing a similar active substance or substances as contained in an authorized orphan medicinal product, and which is intended for the same therapeutic indication. The market exclusivity period for the authorized therapeutic indication may, however, be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan drug designation because, for example, the

product is sufficiently profitable not to justify market exclusivity. Orphan drug designation must be requested before submitting an application for marketing approval. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

Brexit and the Regulatory Framework in the United Kingdom

In June 2016, the electorate in the UK voted in favor of leaving the European Union (commonly referred to as “Brexit”). A transition period began on February 1, 2020, during which European Union pharmaceutical law remained applicable to the UK, which ended on December 31, 2020. However, the European Union and the UK have concluded a trade and cooperation agreement, or TCA, which was provisionally applicable since January 1, 2021 and has been formally applicable since May 1, 2021. The TCA includes specific provisions concerning pharmaceuticals, which include the mutual recognition of GMP, inspections of manufacturing facilities for medicinal products and GMP documents issued, but does not foresee wholesale mutual recognition of UK and European Union pharmaceutical regulations. At present, Great Britain has implemented European Union legislation on the marketing, promotion and sale of medicinal products through the Human Medicines Regulations 2012 (as amended) (under the Northern Ireland Protocol, the European Union regulatory framework will continue to apply in Northern Ireland). The regulatory regime in Great Britain therefore currently broadly aligns with European Union regulations, however it is possible that these regimes will diverge in future now that Great Britain’s regulatory system is independent from the European Union and the TCA does not provide for mutual recognition of UK and European Union pharmaceutical legislation.

In addition, once we begin to conduct business in the United Kingdom, we will be subject to stringent data protection laws that are in effect in the United Kingdom. As of January 1, 2021, the United Kingdom’s European Union (Withdrawal) Act 2018 incorporated the GDPR (as it existed on December 31, 2020 but subject to certain UK specific amendments) into UK law, referred to as the UK GDPR. The UK GDPR and the UK Data Protection Act 2018 set out the United Kingdom’s data protection regime, which is independent from but aligned to the European Union’s data protection regime. Non-compliance with the UK GDPR may result in monetary penalties of up to £17.5 million or 4% of worldwide revenue, whichever is higher.

General Data Protection Regulation

Once we begin processing of personal data regarding individuals in the European Union, including personal health data, our activities will be subject to the GDPR, which became effective on May 25, 2018. The GDPR is wide-ranging in scope and imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches and taking certain measures when engaging third-party processors. The GDPR also imposes strict rules on the transfer of personal data to countries outside the European Union, including the United States, and permits data protection authorities to impose large penalties for violations of the GDPR, including potential fines of up to €20 million or 4% of annual global revenues, whichever is greater. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies and obtain compensation for damages resulting from violations of the GDPR. Compliance with the GDPR will be a rigorous and time-intensive process that may increase the cost of doing business or require us to change our business practices to ensure full compliance.

Coverage and Reimbursement

In the United States and markets in other countries, patients generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors is critical to new product acceptance. Our ability to successfully commercialize our product candidates will depend in part on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Even if

coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain pricing sufficient to realize a sufficient return on our investment. Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels.

There is also significant uncertainty related to the insurance coverage and reimbursement of newly approved products and coverage may be more limited than the purposes for which the medicine is approved by the FDA or comparable foreign regulatory authorities. In the United States, the principal decisions about reimbursement for new medicines are typically made by the Centers for Medicare & Medicaid Services, or CMS, an agency within the U.S. Department of Health and Human Services. CMS decides whether and to what extent a new medicine will be covered and reimbursed under Medicare and private payors tend to follow CMS to a substantial degree.

Factors payors consider in determining reimbursement are based on whether the product is:

- a covered benefit under its health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

Further, net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that reimbursement will be available for any product candidate that we commercialize and, if reimbursement is available, the level of reimbursement. In addition, many pharmaceutical manufacturers must calculate and report certain price reporting metrics to the government, such as average sales price, or ASP, and best price. Penalties may apply in some cases when such metrics are not submitted accurately and timely. Further, these prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the European Union provides options for its Member States to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. To obtain reimbursement or pricing approval, some of these countries may require the completion of clinical trials that compare the cost effectiveness of a particular product candidate to currently available therapies. A Member State may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our product candidates. Historically, products launched in the European Union do not follow price structures of the U.S. and generally prices tend to be significantly lower.

Healthcare Reform

Payors, whether domestic or foreign, or governmental or private, are developing increasingly sophisticated methods of controlling healthcare costs and those methods are not always specifically adapted for new technologies such as gene therapy and therapies addressing rare diseases such as those we are developing. In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory changes to the health care system that could impact our ability to sell our products profitably. In particular, in

[Table of Contents](#)

2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, the ACA, was enacted, which, among other things, subjected biologic products to potential competition by lower-cost biosimilars; addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected; increased the minimum Medicaid rebates owed by most manufacturers under the Medicaid Drug Rebate Program; extended the Medicaid Drug Rebate program to utilization of prescriptions of individuals enrolled in Medicaid managed care organizations; subjected manufacturers to new annual fees and taxes for certain branded prescription drugs; created a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% (increased to 70% pursuant to the Bipartisan Budget Act of 2018, effective as of January 1, 2019) point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D; and provided incentives to programs that increase the federal government's comparative effectiveness research.

Since its enactment, there have been numerous judicial, administrative, executive and legislative challenges to certain aspects of the ACA. On June 17, 2021, the U.S. Supreme Court dismissed the most recent judicial challenge to the ACA brought by several states without specifically ruling on the constitutionality of the ACA. Prior to the Supreme Court's decision, President Biden issued an Executive Order to initiate a special enrollment period from February 15, 2021 through August 15, 2021 for purposes of obtaining health insurance coverage through the ACA marketplace. The Executive Order also instructed certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is unclear how other healthcare reform measures of the Biden administrations or other efforts, if any, to challenge repeal or replace the ACA, will impact our business.

Other legislative changes have been proposed and adopted in the United States since the Affordable Care Act was enacted. For example, on March 11, 2021, President Biden signed the American Rescue Plan Act of 2021 into law, which eliminates the statutory Medicaid drug rebate cap, currently set at 100% of a drug's average manufacturer price, for single source and innovator multiple source drugs, beginning January 1, 2024. Further, in August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least \$1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs, including aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2030 unless additional action is taken by Congress. Pursuant to the Coronavirus Aid, Relief, and Economic Security Act, also known as the CARES Act, as well as subsequent legislation, these reductions have been suspended from May 1, 2020 through December 31, 2021 due to the COVID-19 pandemic.

Further, on May 30, 2018, the Right to Try Act, was signed into law. The law, among other things, provides a federal framework for certain patients to access certain investigational new drug products that have completed a Phase 1 clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a pharmaceutical manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act.

Other Healthcare Laws

Pharmaceutical companies are subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business that may constrain the financial arrangements and relationships through which we research, as well as sell, market and distribute any products for which we obtain marketing authorization. Such laws include, without limitation,

[Table of Contents](#)

state and federal anti-kickback, fraud and abuse, false claims and transparency laws and regulations related to drug pricing and payments and other transfers of value made to physicians and other healthcare providers. If our operations are found to be in violation of any of such laws or any other governmental regulations that apply, we may be subject to penalties, including, without limitation, administrative, civil and criminal penalties, damages, fines, disgorgement, the curtailment or restructuring of operations, integrity oversight and reporting obligations, exclusion from participation in federal and state healthcare programs and responsible individuals may be subject to imprisonment.

Employees and Human Capital Resources

As of November 30, 2021, we had 34 full-time employees and 13 consultants; 16 of our employees have M.D. or Ph.D. degrees. Within our workforce, 25 employees are engaged in research and development and 9 are engaged in business development, finance, legal, and general management and administration. Our human capital resources objectives include identifying, recruiting, retaining, incentivizing and integrating our existing and new employees, advisors and consultants. None of our employees are represented by a labor union or covered by a collective bargaining agreement. We consider our relationship with our employees to be good.

Facilities

Our corporate headquarters is located in Cambridge, Massachusetts, where we lease and occupy 6,940 square feet of office space. The current term of our Cambridge lease expires on December 31, 2022 with an option to continue thereafter on a month to month basis for up to six months.

In September 2021, we also entered into a lease agreement for 19,734 square feet of laboratory and office space in Watertown, Massachusetts. The current term of our Watertown lease expires ten years after the lease commencement date, which is anticipated to be in the second quarter of 2022, and includes an option to extend the term with at least 15 months' notice and rent set at an agreed upon market rate.

We believe our existing facilities in Cambridge and Watertown are sufficient for our needs for the foreseeable future. To meet the future needs of our business, we may lease additional or alternate space, and we believe suitable additional or alternative space will be available in the future on commercially reasonable terms.

Legal Proceedings

From time to time, we may become involved in litigation or other legal proceedings. We are not currently a party to any litigation or legal proceedings that, in the opinion of our management, are probable to have a material adverse effect on our business. Regardless of outcome, litigation can have an adverse impact on our business, financial condition, results of operations and prospects because of defense and settlement costs, diversion of management resources and other factors.

MANAGEMENT

Executive Officers and Directors

The following table sets forth the name, age and position of each of our executive officers and directors as of November 30, 2021.

<u>Name</u>	<u>Age</u>	<u>Position</u>
Executive Officers:		
Ivana Magovčević-Liebisch, PhD, JD	54	President, Chief Executive Officer and Director
Jennifer Ziolkowski, CPA	47	Chief Financial Officer
Spyros Papapetropoulos, MD, PhD	49	Chief Medical Officer
Evan A. Thackaberry, PhD, DABT	49	Senior Vice President, Head of Early Development
Non-Executive Directors:		
Bruce Booth, D.Phil(2)(3)	47	Chairman of the Board
Cheryl Renee Blanchard, PhD(2)(3)	57	Director
Shaan Gandhi, MD, PhD, MBA(1)(2)	35	Director
Gerhard Koenig, PhD(1)	61	Director
Clay Bernardin Thorp(1)	53	Director
Stefan Vitorovic, MS, MBA(3)	36	Director

- (1) Member of our audit committee
- (2) Member of our compensation committee
- (3) Member of our nominating and corporate governance committee

Executive Officers

Ivana Magovčević-Liebisch, PhD, JD, has served as our President and Chief Executive Officer and as a member of our board of directors since July 2020. Prior to Vigil, Dr. Magovčević-Liebisch was Executive Vice President, Chief Business Officer at Ipsen, a pharmaceutical company, from March 2018 to April 2020, where she led the External Innovation, Business Development and Alliance Management functions. Prior to Ipsen, Dr. Magovčević-Liebisch was Executive Vice President, Chief Strategy and Corporate Development Officer at Axcella Health Inc. (NASDAQ: AXLA) from May 2017 to March 2018, and Senior Vice President, Head of Global Business Development for the specialty drug business at Teva Pharmaceutical Industries Ltd. (NYSE: TEVA) from March 2013 to May 2017. Dr. Magovčević-Liebisch previously worked at Dyax Corp. (acquired by Shire plc (NASDAQ: SHPG)) from April 2001 to March 2013 in management roles of increasing scope and responsibility, including Executive Vice President and Chief Operating Officer, where she launched the company's first drug, Kalbitor® for an orphan indication, Hereditary Angiodema. Dr. Magovčević-Liebisch began her biopharma career at Transkaryotic Therapies, Inc., where she was Director of Intellectual Property and Patent Counsel from 1998 to 2001. Dr. Magovčević-Liebisch is currently the Chairperson of the board of directors of ABSCI Corporation (NASDAQ: ABSI), and a member of the board of directors of Applied Genetic Technologies Corporation (NASDAQ: AGTC) and Aeglea BioTherapeutics, Inc. (NASDAQ: AGLE). She is also a trustee of the Boston Museum of Science and of the Boston Ballet, and overseer of Beth Israel Deaconess Medical Center. She received a BA in Biology and Chemistry from Wheaton College, a PhD in Genetics from Harvard University, and a JD in High Technology Law from Suffolk University Law School. We believe Dr. Magovčević-Liebisch's over 20 years of senior management experience in biotechnology and pharmaceutical industry make her well qualified to serve on our board of directors.

Jennifer Ziolkowski, CPA, has served as our Chief Financial Officer since March 2021. Prior to joining Vigil, Ms. Ziolkowski was Chief Financial Officer of Solid Biosciences Inc. (NASDAQ: SLDB) from May 2017

[Table of Contents](#)

to January 2021, where she played a key role in transforming Solid from a private, preclinical company to a publicly-held, clinical-stage biotech company. Previously, Ms. Ziolkowski held various leadership positions at Philips Healthcare from August 2008 to May 2017, most recently as Head of Sales Operations, North America of Philips Healthcare from 2015 to May 2017. Prior to Phillips, Ms. Ziolkowski was Senior Director of Finance and Corporate Controller of TransMedics, Inc. from April 2007 to July 2008, where she played a critical role in building the company's financial operations. Ms. Ziolkowski established her career within the healthcare industry at Cytyc Corporation (acquired by Hologic, Inc. (NASDAQ:HOLX)) from May 2001 to April 2007. Ms. Ziolkowski began her career at PricewaterhouseCoopers LLP from September 1996 to April 2001. Ms. Ziolkowski holds a BS in Accounting from Boston College and is a Certified Public Accountant.

Spyros Papapetropoulos, MD, PhD, has served as our Chief Medical Officer since September 2020. Dr. Papapetropoulos also currently serves as a member of the board of directors of Adamas Pharmaceuticals, Inc. (NASDAQ: ADMS) and as a consultant in neurology at Massachusetts General Hospital. He is the founder and President of Encephalos Life Sciences LLC, a neurosciences consulting company. Prior to joining Vigil, Dr. Papapetropoulos served as Chief Development Officer and Senior Vice President, Head of Development at Acadia Pharmaceuticals Inc. (NASDAQ: ACAD) from November 2019 to September 2020, Chief Executive Officer at SwanBio Therapeutics, Inc. from April 2019 to September 2019, and Head of Research & Development and Chief Medical Officer at Cavion, Inc. (acquired by Jazz Pharmaceuticals plc (NASDAQ: JAZZ)) from June 2017 to April 2019. Before Cavion, Dr. Papapetropoulos held management roles at a number of companies, including Teva Pharmaceutical Industries Ltd. (NYSE: TEVA) from February 2015 to June 2017, Pfizer Inc. (NYSE: PFE) from March 2012 to February 2015, Allergan plc (NYSE: AGN) from May 2010 to March 2012, and Biogen Inc. (NASDAQ: BIIB) from April 2008 to May 2010. Dr. Papapetropoulos was a research professor and subsequently a volunteer professor of neurology at the University of Miami, Miller School of Medicine from November 2008 until August 2017. Dr. Papapetropoulos received his MD and PhD from University of Patras, School of Health Sciences.

Evan A. Thackaberry, PhD, DABT, has served as our Senior Vice President, Head of Early Development since September 2020. Dr. Thackaberry joined Vigil from Ra Pharmaceuticals, Inc. (NASDAQ: RARX), where he served as Vice President of Nonclinical Development from October 2017 to March 2020. Prior to Ra Pharma, Dr. Thackaberry worked at Genentech, Inc. (NYSE: DNA) from July 2010 to September 2017, holding positions of increasing responsibility, including Ophthalmology Platform Team Leader, Research Team Lead, and Safety Assessment Therapeutic Area Leader. Dr. Thackaberry began his career as a regulatory and investigative toxicologist at the Schering-Plough Research Institute from 2005 to 2010. Dr. Thackaberry received his PhD in Environmental and Molecular Toxicology from the University of Wisconsin-Madison.

Non-Executive Directors

Bruce Booth, D.Phil, has served as Chairman of our board of directors since June 2020. Dr. Booth joined Atlas Venture in 2005, and currently serves as a partner of Atlas Venture. Dr. Booth currently serves as Chairman of Kymera Therapeutics, Inc. (NASDAQ: KYMR) and AvroBio, Inc. (NASDAQ: AVRO). He is the co-founder of Kymera and was President and Chief Executive Officer of Kymera from September 2015 to August 2017. Dr. Booth is also a board member of several public and privately held companies, including Magenta Therapeutics, Inc. (NASDAQ: MGTA), Nimbus Therapeutics, LLC, HotSpot Therapeutics, Inc., and Arkuda Therapeutics, Inc. Dr. Booth previously served on the boards of directors of Unum Therapeutics, Inc. (NASDAQ: UMRX) from February 2018 to July 2020, Miragen Therapeutics, Inc. (NASDAQ: VRDN) from 2007 to December 2018, and Zafgen, Inc. (now Larimar Therapeutics, Inc. (NASDAQ: LRMR)) from August 2006 to June 2018. Dr. Booth holds a PhD in Molecular Immunology from Oxford University's Nuffield Department of Medicine and a BS in Biochemistry from Pennsylvania State University. We believe Dr. Booth's extensive leadership, executive, managerial and business experience with life sciences companies, including experience in the formation, development and business strategy of multiple start-up companies in the life sciences sector qualifies him to serve on our board of directors.

Cheryl Renee Blanchard, PhD, has served as a member of our board of directors since November 2020. Dr. Blanchard has served as President and Chief Executive Officer of Anika Therapeutics, Inc. (NASDAQ: ANIK) since April 2020 after serving as interim Chief Executive Officer since February 2020 and has served on Anika's board since August of 2018. Dr. Blanchard is also a current board member of Daré Bioscience, Inc. (NASDAQ: DARE). Prior to her work as an executive officer at Anika, she was President and Chief Executive Officer of Microchips Biotech, Inc. from July 2014 until its sale to Daré Bioscience in November 2019. From July 2018 to July 2019, Dr. Blanchard served as President and Chief Executive Officer of Keratin Biosciences, Inc., a privately-held biotechnology company created by the business combination of Microchips Biotech, Inc. and KeraNetics, LLC. From September 2012 to April 2020, Dr. Blanchard was Principal at Blanchard Consulting, LLC which provided consulting services to life science companies and private equity clients. Dr. Blanchard previously served on the board of directors of SeaSpine Holdings Corp (NASDAQ: SPNE) from July 2015 to May 2019 and Neuronetics, Inc. (NASDAQ: STIM) from February 2019 to July 2020. Dr. Blanchard received her MS and PhD in Materials Science and Engineering from the University of Texas at Austin and her BS in Ceramic Engineering from Alfred University. We believe Dr. Blanchard is qualified to serve on our board of directors because she is a biotech Chief Executive Officer, experienced as a public company board member, and for her strong scientific background in biologics and regenerative medicine and her extensive experience in management, research and product development, business development, and regulatory affairs at multiple companies in the life science industry.

Shaan Gandhi, MD, PhD, MBA, has served as a member of our board of directors since September 2020. Since January 2020, Dr. Gandhi has served as a Director at Northpond Ventures, LLC, a global science, medical and technology-focused venture capital firm. Previously, Dr. Gandhi was a Principal at the Longwood Fund from June 2018 to January 2020, where he created and invested in life sciences companies, including Pyxis Oncology, Inc., a cancer immunotherapy company focused on novel modulators of the tumor microenvironment, which he co-founded and served as President. He was an attending hospitalist at Massachusetts General Hospital from June 2018 to July 2019, where he also did his residency in internal medicine from June 2015 to June 2018. He serves on the boards of directors of various private companies, including CAMP4 Therapeutics Corporation, Garuda Therapeutics, Inc., Mestag Therapeutics, Inc., Parthenon Therapeutics Inc. and Totus Medicines Inc., and of public companies, including Candel Therapeutics, Inc. (NASDAQ: CADL) and DICE Therapeutics, Inc. (NASDAQ: DICE). He holds an MD from Harvard Medical School, an MBA from Harvard Business School, where he was a Baker Scholar, a PhD in Medical Oncology from the University of Oxford, where he was a Rhodes Scholar, and a BS with honors in Biochemistry from Case Western Reserve University. We believe that Dr. Gandhi's financial, managerial and medical experience coupled with his substantial experience as an investor in emerging biotechnology companies provides him with the appropriate set of skills to serve as a member of the board of directors.

Gerhard Koenig, PhD, has served as a member of our board of directors since July 2020. Dr. Koenig currently serves as an Entrepreneur in Residence with Atlas Venture since November 2017 and as Co-Founder, President and Chief Executive Officer of Arkuda Therapeutics, Inc. since February 2018. He also served as an advisor on the scientific advisory board at Disarm Therapeutics, Inc. from February 2017 to December 2020. From June 2016 to October 2017, Dr. Koenig was Chief Executive Officer of Quartet Medicine, Inc., a biotechnology company focused on non-opioid pain medications. Before that, he was Chief Scientific Officer and Senior Vice President of FORUM Pharmaceuticals Inc., a pharmaceutical company owned by Fidelity Investments, from February 2003 to May 2016. Dr. Koenig was Vice President, Scientific Programs and Evaluation of Fidelity Biosciences Group (now F-Prime Capital) from September 2002 to December 2004. Dr. Koenig received his PhD and MS in Molecular and Cellular Neurobiology with a minor in Biochemistry, graduating *summa cum laude*, from the University of Heidelberg, Germany. We believe Dr. Koenig is qualified to serve on our board of directors because of his extensive R&D leadership and drug discovery and development experience spanning early discovery through Phase 3 clinical trials as well as his experience working in the venture capital industry.

Clay Bernardin Thorp has served as a member of our board of directors since September 2020. Mr. Thorp is an entrepreneur turned venture capitalist. Since 1995, he has co-founded eight companies in the life science arena. In 2000, Mr. Thorp co-founded and has since served as General Partner of Hatteras Venture Partners, a venture capital partnership that manages over \$700 million across six vintages, where he leads investments and numerous strategic transaction processes in a range of life science companies, including biopharmaceuticals, medical devices, diagnostics, and research informatics. Some of these companies include G1 Therapeutics, Inc. (NASDAQ: GTHX), Clearside Biomedical, Inc. (NASDAQ: CLSD), Lysosomal Therapeutics, Inc., Asthmatx, Inc., PhaseBio Pharmaceuticals, Inc. (NASDAQ: PHAS), ArtusLabs, Inc., Embrella Cardiovascular, Inc., Kymera Therapeutics, Inc. (NASDAQ: KYMR), and Synthematix, Inc. In addition to serving on our board, Mr. Thorp currently serves as Chairman of PhaseBio Pharmaceuticals, Inc. (NASDAQ: PHAS), and as a member of the board of directors of Clearside Biomedical, Inc. (NASDAQ: CLSD), StrideBio, Inc., GeneCentric Therapeutics, Inc., and Seaport Diagnostics, Inc. He is also on the Strategic and Scientific Advisory Board of Bria Biosciences, Inc. Mr. Thorp serves on the Chancellor's Philanthropic Committee at the University of North Carolina at Chapel Hill (UNC-Chapel Hill), the Board of Visitors of the Lineberger Comprehensive Cancer Center at UNC-Chapel Hill, and the board of the North Carolina School of Science and Mathematics Foundation. Mr. Thorp holds a Master in Public Policy from Harvard University and a BA in Mathematics and Art History from UNC-Chapel Hill. We believe Mr. Thorp is qualified to serve on our board of directors because of his deep experience in the biopharmaceutical, medical device, diagnostics and research informatics life science investment sectors as well as his expertise in the founding of several life sciences companies.

Stefan Vitorovic, MS, MBA, has served as a member of our board of directors since August 2021. Mr. Vitorovic is the co-founder and Managing Director of Vida Ventures, a role he has served in since January 2017. Prior to founding Vida Ventures, Mr. Vitorovic was an investment professional at Third Rock Ventures, an early-stage life sciences venture capital firm, from July 2014 to January 2017. At Third Rock, he was part of the founding team of Decibel Therapeutics, Inc., a hearing-focused drug discovery and development platform company. Before Third Rock, he was an investor at TPG Capital from August 2012 to June 2014, where he focused on majority, control stakes in healthcare companies. Mr. Vitorovic worked on a variety of equity and debt financings, including Aptalis Pharmaceutical Technologies (now Adare Pharma Solutions) and Biomet, Inc. (now Zimmer Biomet Holdings, Inc. (NYSE: ZBH)). Prior to TPG, Mr. Vitorovic was an investment banker at Credit Suisse's healthcare banking group from 2004 to 2008. Mr. Vitorovic currently serves on the board of directors of Praxis Precision Medicines, Inc. (NASDAQ: PRAX), Tectonic Therapeutics, Volastra Therapeutics, Inc., and BAIT Therapeutics, Inc. He was previously a board observer of Oyster Point Pharma, Inc. (NASDAQ: OYST), Dyne Therapeutics (NASDAQ: DYN), and Volastra Therapeutics, Inc., and a board member of Kyverna Therapeutics, Inc. and Sutro Biopharma, Inc. (NASDAQ: STRO). He received a BS with Honors in Biological Sciences and an MS in Biology from Stanford University, where he conducted biomedical research in the lab of Dr. Helen Blau at Stanford Medical School. Mr. Vitorovic received his MBA from Harvard Business School. We believe Mr. Vitorovic is qualified to serve on our board of directors because of his deep expertise in life sciences research and investing, as well as his extensive experience in new company formation and operations.

Composition of Our Board of Directors

Our board consists of seven members, each of whom are members pursuant to the board composition provisions of our second amended and restated certificate of incorporation and agreements with our stockholders. These board composition provisions will terminate upon the completion of this offering. Upon the termination of these provisions, there will be no further contractual obligations regarding the election of our directors. Our nominating and corporate governance committee and our board of directors may therefore consider a broad range of factors relating to the qualifications and background of nominees. Our nominating and corporate governance committee's and our board of directors' priority in selecting board members is identification of persons who will further the interests of our stockholders through their established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, knowledge of our business, understanding of the competitive landscape, professional and personal experiences, and expertise relevant to our growth strategy. Our directors hold office until their successors have been elected and qualified or until the

earlier of their resignation or removal. Our third amended and restated certificate of incorporation that will become effective immediately prior to the closing of this offering and amended and restated bylaws that will become effective upon the effectiveness of the registration statement of which this prospectus is a part, also provide that our directors may be removed only for cause by the affirmative vote of the holders of at least two-thirds of the votes that all our stockholders would be entitled to cast in an annual election of directors, and that any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office.

Director Independence

Our board of directors has determined that all members of the board of directors, except Ivana Magovčević-Liebisch, are independent directors, including for purposes of the rules of the Nasdaq Global Market and the SEC. In making such independence determination, our board of directors considered the relationships that each non-employee director has with us and all other facts and circumstances that our board of directors deemed relevant in determining their independence, including the beneficial ownership of our capital stock by each non-employee director. In considering the independence of the directors listed above, our board of directors considered the association of our directors with the holders of more than 5% of our common stock. Upon the completion of this offering, we expect that the composition and functioning of our board of directors and each of our committees will comply with all applicable requirements of the Nasdaq Global Market and the rules and regulations of the SEC. There are no family relationships among any of our directors or executive officers. Dr. Magovčević-Liebisch is not an independent director under these rules because she is the President and Chief Executive Officer of the Company.

Staggered Board

In accordance with the terms of our third amended and restated certificate of incorporation that will become effective immediately prior to the closing of this offering and our amended and restated bylaws that will become effective upon the effectiveness of the registration statement of which this prospectus is a part, our board of directors will be divided into three staggered classes of directors and each will be assigned to one of the three classes. At each annual meeting of the stockholders, a class of directors will be elected for a three-year term to succeed the directors of the same class whose terms are then expiring. The terms of the directors will expire upon the election and qualification of successor directors at the annual meeting of stockholders to be held during the years 2022 for Class I directors, 2023 for Class II directors and 2024 for Class III directors.

- Our Class I directors will be Shaan Gandhi, MD, PhD, MBA, Gerhard Koenig, PhD, and Clay Bernardin Thorp;
- Our Class II directors will be Cheryl Renee Blanchard, PhD and Stefan Vitorovic, MS, MBA; and
- Our Class III directors will be Bruce Booth, D.Phil and Ivana Magovčević-Liebisch, PhD, JD.

Our third amended and restated certificate of incorporation that will become effective immediately prior to the closing of this offering and amended and restated bylaws that will become effective upon the effectiveness of the registration statement of which this prospectus is a part provide that the number of our directors shall be fixed from time to time by a resolution of the majority of our board of directors.

The division of our board of directors into three classes with staggered three-year terms may delay or prevent stockholder efforts to effect a change of our management or a change in control.

Board Leadership Structure

Currently, the role of chairman of the board of directors is separated from the role of Chief Executive Officer. Our Chief Executive Officer is responsible for recommending strategic decisions and capital allocation

to the board of directors and to ensure the execution of the recommended plans. The chairman of the board of directors is responsible for leading the board of directors in its fundamental role of providing advice to and independent oversight of management. Our board of directors recognizes the time, effort and energy that the Chief Executive Officer is required to devote to his position in the current business environment, as well as the commitment required to serve as our chairman, particularly as the board of directors' oversight responsibilities continue to grow. While our amended and restated bylaws and corporate governance guidelines will not require that our chairman and Chief Executive Officer positions be separate, our board of directors believes that having separate positions is the appropriate leadership structure for us at this time and demonstrates our commitment to good corporate governance.

Role of the Board in Risk Oversight

Risk is inherent with every business, and how well a business manages risk can ultimately determine its success. We face a number of risks, including the risks discussed in the section entitled "Risk Factors" appearing elsewhere in this prospectus. Management is responsible for the day-to-day management of risks we face, while our board of directors, as a whole and through its committees, has responsibility for the oversight of risk management. In its risk oversight role, our board of directors has the responsibility to satisfy itself that the risk management processes designed and implemented by management are adequate and functioning as designed.

The role of the board of directors in overseeing the management of our risks is conducted primarily through committees of the board of directors, as disclosed in the descriptions of each of the committees below and in the charters of each of the committees. The full board of directors (or the appropriate board committee in the case of risks that are under the purview of a particular committee) discusses with management our major risk exposures, their potential impact on us, and the steps we take to manage them. When a board committee is responsible for evaluating and overseeing the management of a particular risk or risks, the chairman of the relevant committee reports on the discussion to the full board of directors during the committee reports portion of the next board meeting. This enables the board of directors and its committees to coordinate the risk oversight role, particularly with respect to risk interrelationships.

Committees of Our Board of Directors

Our board of directors has established an audit committee, a compensation committee and a nominating and corporate governance committee, each of which will operate pursuant to a charter to be adopted by our board of directors that will be effective upon the effectiveness of the registration statement of which this prospectus is a part. The board of directors may also establish other committees from time to time to assist the Company and the board of directors. Upon the effectiveness of the registration statement of which this prospectus is a part, the composition and functioning of all of our committees will comply with all applicable requirements of the Sarbanes-Oxley Act of 2002, Nasdaq and SEC rules and regulations, if applicable. Upon our listing on Nasdaq, each committee's charter will be available on our website at www.vigilneuro.com. The reference to our website address does not constitute incorporation by reference of the information contained at or available through our website, and you should not consider it to be part of this prospectus.

Audit Committee

Shaan Gandhi, MD, PhD, MBA, Gerhard Koenig, PhD and Clay Bernardin Thorp serve on the audit committee, which is chaired by Clay Bernardin Thorp. Our board of directors has determined that each member of the audit committee is "independent" for audit committee purposes as that term is defined by the rules of the SEC and Nasdaq, and that each has sufficient knowledge in financial and auditing matters to serve on the audit committee. Our board of directors has designated Clay Bernardin Thorp as the "audit committee financial expert," as defined under the applicable rules of the SEC. The audit committee's responsibilities include:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;

Table of Contents

- pre-approving auditing and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing the overall audit plan with our independent registered public accounting firm and members of management responsible for preparing our consolidated financial statements;
- reviewing and discussing with management and our independent registered public accounting firm our annual and quarterly financial statements and related disclosures as well as critical accounting policies and practices used by us;
- coordinating the oversight and reviewing the adequacy of our internal control over financial reporting;
- discussing the guidelines and policies that govern the process by which the Company's exposure to risk is assessed and managed by management;
- establishing policies and procedures for the receipt and retention of accounting-related complaints and concerns;
- recommending, based upon the audit committee's review and discussions with management and our independent registered public accounting firm, whether our audited financial statements shall be included in our Annual Report on Form 10-K;
- monitoring the integrity of our financial statements and our compliance with legal and regulatory requirements as they relate to our financial statements and accounting matters;
- preparing the audit committee report required by SEC rules to be included in our annual proxy statement;
- reviewing all related person transactions for potential conflict of interest situations and approving all such transactions; and
- reviewing quarterly earnings releases.

Compensation Committee

Cheryl Renee Blanchard, PhD, Bruce Booth, D.Phil and Shaan Gandhi, MD, PhD, MBA serve on the compensation committee, which is chaired by Cheryl Renee Blanchard, PhD. Our board of directors has determined that each member of the compensation committee is "independent" as defined in the Nasdaq listing standards. The compensation committee's responsibilities include:

- annually reviewing and approving the corporate goals and objectives relevant to the compensation of our Chief Executive Officer;
- evaluating the performance of our Chief Executive Officer in light of such corporate goals and objectives and based on such evaluation recommending to the board of directors the cash compensation of our Chief Executive Officer;
- reviewing and approving the compensation of our other executive officers;
- reviewing and establishing our overall management compensation, philosophy and policy;
- overseeing and administering our compensation and similar plans;
- reviewing and approving the retention or termination of any consulting firm or outside advisor to assist in the evaluation of compensation matters and evaluating and assessing potential and current compensation advisors in accordance with the independence standards identified in the Nasdaq listing standards;
- retaining and approving the compensation of any compensation advisors;
- reviewing and approving our policies and procedures for the grant of equity-based awards;

Table of Contents

- reviewing and recommending to the board of directors the compensation of our directors; and
- preparing the compensation committee report required by SEC rules, if and when required, to be included in our proxy statement or annual report on Form 10-K.

Nominating and Corporate Governance Committee

Cheryl Renee Blanchard, PhD, Bruce Booth, D.Phil and Stefan Vitorovic, MS, MBA serve on the nominating and corporate governance committee, which is chaired by Stefan Vitorovic, MS, MBA. Our board of directors has determined that each member of the nominating and corporate governance committee is “independent” as defined in the Nasdaq listing standards. The nominating and corporate governance committee’s responsibilities include:

- developing and recommending to the board of directors criteria for board and committee membership;
- establishing procedures for identifying and evaluating board of director candidates, including nominees recommended by stockholders;
- reviewing the composition of the board of directors to ensure that it is composed of members containing the appropriate skills and expertise to advise us;
- identifying individuals qualified to become members of the board of directors;
- recommending to the board of directors the persons to be nominated for election as directors and to each of the board’s committees;
- reviewing and recommending to the board of directors appropriate corporate governance guidelines;
- overseeing the evaluation of our board of directors;
- reviewing and discussing with the board of directors corporate succession plans for the Chief Executive Officer and other key officers; and
- reviewing environmental, social and governance matters pertaining to the Company, including environmental, social and governance policies and initiatives.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee has at any time during the prior three years been one of our officers or employees. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving on our board of directors or compensation committee.

Corporate Governance

Prior to the effectiveness of the registration statement of which this prospectus is a part, we will adopt a written code of business conduct and ethics that applies to our directors, officers, and employees, including our principal executive officer, principal financial officer, principal accounting officer, or controller, or persons performing similar functions. Following the effectiveness of the registration statement of which this prospectus is a part, a current copy of this code will be posted on the Corporate Governance section of our website, which is located at www.vigilneuro.com. The information on our website is deemed not to be incorporated in this prospectus or to be a part of this prospectus. If we make any substantive amendments to, or grant any waivers from, the code of business conduct and ethics for any officer or director, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

Limitations on Liability and Indemnification Matters

As permitted by Delaware law, provisions in our third amended and restated certificate of incorporation, which will become effective immediately prior to the closing of this offering, and amended and restated bylaws,

[Table of Contents](#)

which became effective upon the effectiveness of this registration statement, limit or eliminate the personal liability of directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, a director exercise an informed business judgment based on all material information reasonably available to him or her. Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any act related to unlawful stock repurchases, redemptions or other distributions or payments of dividends; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not limit or eliminate our rights or any stockholder's rights to seek non-monetary relief, such as injunctive relief or rescission. These provisions will not alter a director's liability under other laws, such as the federal securities laws or other state or federal laws. Our third amended and restated certificate of incorporation that will become effective immediately prior to the closing of this offering also authorizes us to indemnify our officers, directors and other agents to the fullest extent permitted under Delaware law.

As permitted by Delaware law, our amended and restated bylaws, which became effective upon the effectiveness of this registration statement will provide that:

- we will indemnify our directors, officers, employees and other agents to the fullest extent permitted by law;
- we must advance expenses to our directors and officers, and may advance expenses to our employees and other agents, in connection with a legal proceeding to the fullest extent permitted by law; and
- the rights provided in our amended and restated bylaws are not exclusive.

If Delaware law is amended to authorize corporate action further eliminating or limiting the personal liability of a director or officer, then the liability of our directors or officers will be so eliminated or limited to the fullest extent permitted by Delaware law, as so amended. Our amended and restated bylaws will also permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in connection with their services to us, regardless of whether our bylaws permit such indemnification. We have obtained such insurance.

In addition to the indemnification that will be provided for in our third amended and restated certificate of incorporation and amended and restated bylaws, we plan to enter into separate indemnification agreements with each of our directors and executive officers, which may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law. These indemnification agreements may require us, among other things, to indemnify our directors and executive officers for some expenses, including attorneys' fees, expenses, judgments, fines and settlement amounts incurred by a director or executive officer in any action or proceeding arising out of his service as one of our directors or executive officers or any other company or enterprise to which the person provides services at our request. We believe that these provisions and agreements are necessary to attract and retain qualified individuals to serve as directors and executive officers.

This description of the indemnification provisions of our third amended and restated certificate of incorporation, our amended and restated bylaws and our indemnification agreements is qualified in its entirety by reference to these documents, each of which is attached as an exhibit to the registration statement of which this prospectus forms a part.

[Table of Contents](#)

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable.

There is no pending litigation or proceeding naming any of our directors or officers as to which indemnification is being sought, nor are we aware of any pending or threatened litigation that may result in claims for indemnification by any director or officer.

Rule 10b5-1 Sales Plans

Our directors and executive officers may adopt written plans, known as Rule 10b5-1 plans, in which they will contract with a broker to buy or sell shares of our common stock on a periodic basis. Under a Rule 10b5-1 plan, a broker executes trades pursuant to parameters established by the director or officer when entering into the plan, without further direction from them. The director or officer may amend a Rule 10b5-1 plan in some circumstances and may terminate a plan at any time. Our directors and executive officers also may buy or sell additional shares outside of a Rule 10b5-1 plan when they are not in possession of material nonpublic information subject to compliance with the terms of our insider trading policy. Prior to 180 days after the date of this offering, subject to early termination, the sale of any shares under such plans would be prohibited by the lock-up agreement that the director or officer has entered into with the underwriters.

EXECUTIVE COMPENSATION

The following discussion contains forward-looking statements that are based on our current plans, considerations, expectations and determinations regarding our future compensation programs. The actual amount and form of compensation and the compensation policies and practices that we adopt in the future may differ materially from currently planned programs as summarized in this discussion.

As an emerging growth company, we have opted to comply with the executive compensation disclosure rules applicable to “smaller reporting companies,” as such term is defined in the rules promulgated under the Securities Act. The compensation provided to our named executive officers for the fiscal year ended December 31, 2021 is detailed in the 2021 Summary Compensation Table and accompanying footnotes and narrative that follow. Our named executive officers for the fiscal year ended December 31, 2021 are:

- Ivana Magovčević-Liebisch, PhD, JD, our President and Chief Executive Officer;
- Spyridon (Spyros) Papapetropoulos, MD, PhD; our Chief Medical Officer; and
- Jennifer Ziolkowski, our Chief Financial Officer.

To date, the compensation of our named executive officers has consisted of a combination of base salary, cash bonuses and long-term incentive compensation in the form of stock options and restricted stock awards. Our named executive officers, like all of our full-time employees, are eligible to participate in our health and welfare benefit plans. As we transition from a private company to a publicly traded company, we intend to evaluate our compensation values and philosophy and compensation plans and arrangements as circumstances require.

2021 Summary Compensation Table

The following table shows the total compensation earned by, or paid to, our named executive officers for services rendered to us in all capacities during the fiscal years indicated.

<u>Name and Principal Position</u>	<u>Year</u>	<u>Salary (\$)</u>	<u>Bonus (\$)</u>	<u>Stock Awards (\$)(2)</u>	<u>Option Awards (\$)(3)</u>	<u>Non-Equity Incentive Plan Compensation (\$)(4)</u>	<u>All Other Compensation (\$)</u>	<u>Total (\$)</u>
Ivana Magovčević-Liebisch, PhD, JD	2021	450,000	—	—	1,911,652	—	—	2,361,652
<i>President and Chief Executive Officer</i>	2020	203,699	—	434,950	1,633,879	197,800	—	2,470,328
Spyros Papapetropoulos, MD, PhD	2021	396,935	50,000 ⁽⁵⁾	—	533,148	—	—	980,083
<i>Chief Medical Officer</i>	2020	115,253	30,000 ⁽⁵⁾	—	408,820	38,853	—	592,926
Jennifer Ziolkowski ⁽¹⁾	2021	312,500	—	—	957,523	—	—	1,270,023
<i>Chief Financial Officer</i>								

(1) Ms. Ziolkowski commenced employment with us on March 1, 2021. Her annual base salary for 2021 was \$375,000.

(2) The amount reported represents the aggregate grant date fair value of the restricted stock award granted to Dr. Magovčević-Liebisch during our fiscal year ended December 31, 2020, computed in accordance with Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 718. Such grant date fair value does not take into account any estimated forfeitures related to service-based vesting. A discussion of the assumptions used in determining grant date fair value may be found in Note 6 to our financial statements for the year ended December 31, 2021, included elsewhere in this prospectus. This amount does not correspond to the actual value that may be recognized by Dr. Magovčević-Liebisch upon the vesting of such award or sale of the underlying shares of stock.

(3) The amounts reported represent the aggregate grant date fair value of stock option awards granted to our named executive officers during our fiscal years ended December 31, 2021 and December 31, 2020, computed in accordance with FASB ASC Topic 718. Such grant date fair values do not take into account any estimated forfeitures related to service-based vesting. For performance-based stock options, the value

[Table of Contents](#)

reported reflects the value of the award at the grant date based upon the probable outcome of the performance conditions, which is assumed to be the maximum level of achievement. A discussion of the assumptions used in determining grant date fair value may be found in Note 6 to our financial statements for the year ended December 31, 2021, included elsewhere in this prospectus. These amounts do not correspond to the actual value that may be recognized by the named executive officers upon exercise of the applicable award or sale of the underlying shares of stock.

- (4) Cash incentive bonuses for performance during the year ended December 31, 2021 are not calculable as of the latest practicable date prior to the filing of this prospectus. We expect that such amounts will be determined later in the first quarter of the fiscal year ending December 31, 2022 and we will disclose the amount of such bonuses when they are determined. For more information on these bonuses, see the description of the annual performance bonuses under “2021 Cash Bonuses” below.
- (5) The amounts reported represents signing bonuses paid to Dr. Papapetropoulos pursuant to his employment agreement with the Company, which are subject to repayment in the event he decides to leave the Company within the first 18 months of his employment.

Narrative Disclosure to Summary Compensation Table

2021 Base Salaries

Our named executive officers each receive a base salary to compensate them for services rendered to our Company. The base salary payable to each named executive officer is intended to provide a fixed component of compensation reflecting the executive’s skill set, experience, role and responsibilities. Base salaries are expected to be reviewed annually, typically in connection with our annual performance review process, approved by our board of directors or the compensation committee of the board of directors, and may be adjusted from time to time to realign salaries with market levels after taking into account individual responsibilities, performance and experience.

The annual base salaries for each of our named executive officers for the fiscal year ended December 31, 2021 are set forth in the table below:

<u>Name</u>	<u>Annual Base Salary</u>
Ivana Magovčević-Liebisch	\$ 450,000
Spyros Papapetropoulos	\$ 396,935
Jennifer Ziolkowski	\$ 375,000

2021 Cash Bonuses

For the fiscal year ended December 31, 2021, each of the named executive officers was eligible to earn an annual cash bonus based on the achievement of certain corporate performance milestones. The target annual bonus for each of our named executive officers for the fiscal year ended December 31, 2021 was equal to the percentage of the executive’s respective annual base salary specified below:

<u>Name</u>	<u>Target Bonus Percentage</u>
Ivana Magovčević-Liebisch	45%
Spyros Papapetropoulos	30%
Jennifer Ziolkowski	35%

Each named executive officer’s annual cash bonus is determined by reference to the achievement of pre-determined corporate, research and development, clinical and regulatory, as well as chemistry manufacturing and controls goals. The annual cash bonuses for the fiscal year ended December 31, 2021 have not been determined as of the date of this filing, but will be disclosed once determined.

[Table of Contents](#)

In addition, in the fiscal year ended December 31, 2021, Dr. Papapetropoulos received the second installment of \$50,000 of the \$80,000 signing bonus payable to him pursuant to the terms of his employment agreement with the Company, which signing bonus is subject to repayment in the event that Dr. Papapetropoulos decides to leave the Company within the first 18 months of his employment.

Equity-Based Compensation

Although we do not yet have a formal policy with respect to the grant of equity incentive awards to our executive officers, we believe that equity grants provide our executives with a strong link to our long-term performance, create an ownership culture and help to align the interests of our executives and our stockholders. In addition, we believe that equity grants promote executive retention because they incentivize our executive officers to remain in our employment during the vesting period. Accordingly, our board of directors or our compensation committee periodically reviews the equity incentive compensation of our named executive officers and may grant equity incentive awards to them from time to time. In furtherance of these goals, in 2020 each of our named executive officers was granted stock option awards. For additional information regarding outstanding equity awards held by our named executive officers as of December 31, 2021, see the “*Outstanding Equity Awards at 2021 Fiscal Year End*” table below.

Outstanding Equity Awards at 2021 Fiscal Year End

The following table lists all outstanding equity awards held by our named executive officers as of December 31, 2021.

Name	Option Awards(1)						Stock Awards	
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested (\$)(2)	
Ivana Magovčević-Liebisch	130,811(3)	238,540(3)	—	1.89	11/18/2030	—	—	
	19,780(4)	190,849(4)	—	1.89	11/18/2030	—	—	
	—	—	—	—	—	108,930(5)	1,742,880	
	33,791(6)	371,703(6)	—	6.02	8/18/2031	—	—	
	1,803(7)	41,468(7)	—	9.57	10/13/2031	—	—	
Spyros Papapetropoulos	46,845(8)	103,059(8)	—	1.89	11/18/2030	—	—	
	—	62,459(9)	—	3.78	6/3/2031	—	—	
	4,917(10)	54,089(10)	—	6.02	8/18/2031	—	—	
	902(11)	20,733(11)	—	9.57	10/13/2031	—	—	
Jennifer Ziolkowski	—	49,968(9)	—	3.78	6/3/2031	—	—	
	—	119,923(12)	—	3.78	6/3/2031	—	—	
	8,004(9)	88,047(9)	—	6.02	8/18/2031	—	—	
	902(10)	20,733(10)	—	9.57	10/13/2021	—	—	

(1) Each option award was granted under the Vigil Neuroscience, Inc. 2020 Equity Incentive Plan, or the 2020 Plan.

(2) Represents the fair market value of the shares that were unvested as of December 31, 2021. The fair market value assumes an initial public offering price of \$16.00 per share, which is the midpoint of the price range set forth on the cover page of this prospectus.

(3) Represents an option to purchase shares of our common stock granted on November 19, 2020. The shares underlying this option vest as follows: 25% of the shares vested on July 10, 2021 and the remainder vest in

Table of Contents

36 equal monthly installments thereafter, subject to the executive's Continued Service (as defined in the 2020 Plan) through the applicable vesting date. In the event of a Change in Control (as defined in the 2020 Plan), 100% of the shares will become fully vested upon consummation of such Change in Control. In the event of a termination of the executive's Continued Service without Cause (as defined in the 2020 Plan) or by the executive for Good Reason (as defined in the 2020 Plan), the option will vest with respect to the number of shares which would have vested if the executive's Continued Service had continued for a period of 12 months following the date of such termination.

- (4) Represents an option to purchase shares of our common stock granted on November 19, 2020. The shares underlying this option vest in equal monthly installments over 48 months, subject to the achievement of certain performance conditions by October 31, 2021. The performance conditions were achieved on May 28, 2021, and the shares underlying this option vest in equal monthly installments over 48 months following such date, subject to the executive's Continued Service through the applicable vesting date. In the event of a Change in Control, 100% of the shares will become fully vested upon consummation of such Change in Control. In the event of a termination of the executive's Continued Service without Cause or by the executive for Good Reason, the option will vest with respect to the number of shares which would have vested if the executive's Continued Service had continued for a period of 12 months following the date of such termination.
- (5) Represents restricted shares granted on July 8, 2020. The shares vest in equal monthly installments over 48 months commencing on May 1, 2020, in each case, subject to the executive's continued service through the applicable vesting date. In the event of a Change in Control, 100% of the shares will become fully vested upon consummation of the Change in Control. In the event of a termination of the executive's service without Cause (as defined in the award agreement) or by the executive for Good Reason (as defined in the award agreement), 50% of the then-unvested shares will become fully vested as of such termination.
- (6) Represents an option to purchase shares of our common stock granted on August 19, 2021. The shares underlying this option vest in equal monthly installments over 48 months following August 13, 2021, subject to the executive's Continued Service through the applicable vesting date. In the event of a Change in Control, 100% of the shares will become fully vested upon consummation of such Change in Control. In the event of a termination of the executive's Continued Service without Cause or by the executive for Good Reason, the option will vest with respect to the number of shares which would have vested if the executive's Continued Service had continued for a period of 12 months following the date of such termination.
- (7) Represents an option to purchase shares of our common stock granted on October 14, 2021. The shares underlying this option vest in equal monthly installments over 48 months following October 14, 2021, subject to the executive's Continued Service through the applicable vesting date. In the event of a Change in Control, 100% of the shares will become fully vested upon consummation of such Change in Control. In the event of a termination of the executive's Continued Service without Cause or by the executive for Good Reason, the option will vest with respect to the number of shares which would have vested if the executive's Continued Service had continued for a period of 12 months following the date of such termination.
- (8) Represents an option to purchase shares of our common stock granted on November 19, 2020. The shares underlying this option vest as follows: 25% of the shares vested on September 14, 2021 and the remainder vest in 36 equal monthly installments thereafter, subject to the executive's Continued Service to the Company through the applicable vesting date. In the event of an Involuntary Termination (as defined in the executive's offer letter with the Company) that occurs within 30 days of or in connection with a Change in Control (as defined in the 2020 Plan), 100% of the shares will vest as of the date of such Involuntary Termination.
- (9) Represents an option to purchase shares of our common stock granted on June 4, 2021. The shares underlying this option vests as follows: 25% of the shares vest on June 1, 2022 and the remainder vest in 36 equal monthly installments thereafter, subject to the executive's Continued Service to the Company through the applicable vesting date. In the event of an Involuntary Termination that occurs within 30 days of or in connection with a Change in Control, 100% of the shares will vest as of the date of such Involuntary Termination.
- (10) Represents an option to purchase shares of our common stock granted on August 19, 2021. The shares underlying this option vest in equal monthly installments over 48 months following August 13, 2021,

subject to the executive's Continued Service to the Company through the applicable vesting date. In the event of an Involuntary Termination that occurs within 30 days of or in connection with a Change in Control, 100% of the shares will vest as of the date of such Involuntary Termination.

- (11) Represents an option to purchase shares of our common stock granted on October 14, 2021. The shares underlying this option in equal monthly installments over 48 months following October 14, 2021, subject to the executive's Continued Service to the Company through the applicable vesting date. In the event of an Involuntary Termination that occurs within 30 days of or in connection with a Change in Control, 100% of the shares will vest as of the date of such Involuntary Termination.
- (12) Represents an option to purchase shares of our common stock granted on June 4, 2021. The shares underlying this option vest as follows: 25% of the shares vest on March 1, 2022 and the remainder vest in 36 equal monthly installments thereafter, subject to the executive's Continued Service to the Company through the applicable vesting date. In the event of an Involuntary Termination that occurs within 30 days of or in connection with a Change in Control, 100% of the shares will vest as of the date of such Involuntary Termination.

Executive Compensation Arrangements

Employment Arrangements in Place Prior to the Offering for Named Executive Officers

Ivana Magovčević-Liebisch

On July 17, 2020, we entered into an offer letter with Dr. Magovčević-Liebisch, or the Magovčević-Liebisch Offer Letter, for the position of President and Chief Executive Officer. The Magovčević-Liebisch Offer letter provides for Dr. Magovčević-Liebisch's at-will employment. The Magovčević-Liebisch Offer Letter provides that all unvested equity awards held by Dr. Magovčević-Liebisch will vest immediately prior to a Change in Control (as defined in the Magovčević-Liebisch Offer Letter). In the event Dr. Magovčević-Liebisch was subject to an Involuntary Termination (as defined in the Magovčević-Liebisch Offer Letter and which entails a termination of her employment by the Company without Cause or a Resignation for Good Reason), subject to her execution and non-revocation of a separation agreement, including a general release of claims in favor of the Company, Dr. Magovčević-Liebisch was entitled to a payment equal to (i) 12 months of her then-effective base salary, plus any earned but unpaid bonus for the year prior to the year of termination and an amount equal to the accrued pro-rated target bonus during the year of termination, (ii) if Dr. Magovčević-Liebisch was participating in the Company's group health plan immediately prior to her last day of employment and she elected COBRA health continuation, a monthly cash payment for 12 months, in an amount equal to the monthly employer contribution the Company would have paid to provide her with health insurance had she remained employed; and (iii) accelerated vesting of her outstanding equity awards as further described in the footnotes to the Outstanding Equity Awards at 2021 Fiscal Year-End table above. In addition, if an Involuntary Termination occurs within 30 days of or in connection with a Change in Control (as defined in the Magovčević-Liebisch Offer Letter), the unvested portion of Dr. Magovčević-Liebisch's outstanding equity awards will accelerate and vest in full. Dr. Magovčević-Liebisch has also entered into an Employee Confidential Information and Inventions Assignment Agreement that contains various restrictive covenants, including, non-competition and non-solicitations provisions that apply during her employment and for one year thereafter.

Spyridon Papapetropoulos

On August 31, 2020, we entered into an offer letter with Dr. Papapetropoulos, or the Papapetropoulos Offer Letter, for the position of Chief Medical Officer. The Papapetropoulos Offer Letter provides for Dr. Papapetropoulos's at-will employment. Pursuant to the Papapetropoulos Offer Letter, Dr. Papapetropoulos is also entitled to an \$80,000 signing bonus, with \$30,000 of the signing bonus payable during the first month of his employment and the remaining \$50,000 payable on the first anniversary of his start date. The signing bonus is subject to repayment in the event Dr. Papapetropoulos decides to leave the Company within the first 18 months of his employment. In the event Dr. Papapetropoulos was subject to an Involuntary Termination (as defined in the Papapetropoulos Offer Letter and which entails a termination of his employment by the Company without

Cause or a Resignation for Good Reason), subject to his execution and non-revocation of a separation agreement, including a general release of claims in favor of the Company, Dr. Papapetropoulos was entitled to a payment equal to (i) six months of his then-effective base salary, plus any earned but unpaid bonus for the year prior to the year of termination and an amount equal to the accrued pro-rated target bonus during the year of termination, and (ii) if Dr. Papapetropoulos was participating in the Company's group health plan immediately prior to his last day of employment and he elected COBRA health continuation, a monthly cash payment for six months, in an amount equal to the monthly employer contribution the Company would have paid to provide the Dr. Papapetropoulos with health insurance if he had remained employed. In addition, if such a termination event occurred within 30 days of or in connection with a Change in Control (as defined in the Papapetropoulos Offer Letter), the unvested portion of Dr. Papapetropoulos's outstanding equity awards would have accelerated and vested in full. Dr. Papapetropoulos has also entered into an Employee Confidential Information and Inventions Assignment Agreement that contains various restrictive covenants, including, non-competition and non-solicitations provisions that apply during his employment and for one year thereafter.

Jennifer Ziolkowski

On November 13, 2020, we entered into an offer letter with Ms. Ziolkowski, or the Ziolkowski Offer Letter, for the position of Chief Financial Officer. The Ziolkowski Offer Letter provides for Ms. Ziolkowski at-will employment. In the event Ms. Ziolkowski was subject to an Involuntary Termination (as defined in the Ziolkowski Offer Letter and which entails a termination of his employment by the Company without Cause or a Resignation for Good Reason), subject to her execution and non-revocation of a separation agreement, including a general release of claims in favor of the Company, Ms. Ziolkowski was entitled to a payment equal to (i) six months of her then-effective base salary, plus any earned but unpaid bonus for the year prior to the year of termination and an amount equal to the accrued pro-rated target bonus during the year of termination, and (ii) if Ms. Ziolkowski was participating in the Company's group health plan immediately prior to her last day of employment and she elected COBRA health continuation, a monthly cash payment for six months, in an amount equal to the monthly employer contribution the Company would have paid to provide the Ms. Ziolkowski with health insurance if she had remained employed. In addition, if such a termination event occurred within 30 days of or in connection with a Change in Control (as defined in the Ziolkowski Offer Letter), the unvested portion of Ms. Ziolkowski outstanding equity awards would have accelerated and vested in full. Ms. Ziolkowski has also entered into an Employee Confidential Information and Inventions Assignment Agreement that contains various restrictive covenants, including, non-competition and non-solicitations provisions that apply during her employment and for one year thereafter.

Employment Arrangements upon the Closing of the Offering for Named Executive Officers

Effective upon the closing of this offering, we intend to enter into employment agreements with each of our named executive officers that will replace their offer letters and provide for specified payments and benefits in connection with a termination of employment in certain circumstances. The material terms of the employment agreements we intend to enter into with our named executive officers are summarized below.

Employment Agreement with Ivana Magovčević-Liebisch

Pursuant to the employment agreement with Dr. Magovčević-Liebisch, or the CEO Agreement, Dr. Magovčević-Liebisch will continue to serve as our President and Chief Executive Officer. Dr. Magovčević-Liebisch's current annual base salary is \$450,000 and she is eligible to earn an annual bonus with a target amount equal to 45% of her base salary. Dr. Magovčević-Liebisch's base salary upon the closing of this offering will be \$560,000, which is subject to periodic review and adjustment, and she will be eligible to earn an annual bonus with a target amount equal to 55% of her base salary. Dr. Magovčević-Liebisch is also eligible to participate in the employee benefit plans available to our employees, subject to the terms of those plans.

Pursuant to the CEO Agreement, if Dr. Magovčević-Liebisch's employment is terminated by us without Cause or by Dr. Magovčević-Liebisch for Good Reason outside of the Change in Control Period (as such terms

[Table of Contents](#)

are defined in the CEO Agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, then Dr. Magovčević-Liebisch will be entitled to (i) 12 months of continuation of her then-current base salary; (ii) 50% acceleration of any unvested Founders Shares (as defined in the CEO Agreement) and accelerated vesting of all stock options and other stock-based awards subject solely to time-based vesting held by Dr. Magovčević-Liebisch that would have vested during the 12 month period following such termination; and (iii) subject to Dr. Magovčević-Liebisch's copayment of premium amounts at the applicable active employees' rate and proper election to continue COBRA health coverage, payment of the portion of the premiums equal to the amount that we would have paid to provide health insurance to Dr. Magovčević-Liebisch had she remained employed with us until the earliest of (A) 12 months following termination, (B) Dr. Magovčević-Liebisch's eligibility for group medical plan benefits under any other employer's group medical plan or (C) the end of Dr. Magovčević-Liebisch's COBRA health continuation period.

If Dr. Magovčević-Liebisch's employment is terminated by us without Cause or by Dr. Magovčević-Liebisch for Good Reason within the Change in Control Period then, subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, Dr. Magovčević-Liebisch will be entitled to (i) a lump sum cash payment equal to 1.5 times the sum of her then-current base salary (or her base salary in effect immediately prior to the Change in Control (as defined in the CEO Agreement), if higher) and her target bonus for the then-current year (or her target bonus in effect immediately prior to the Change in Control, if higher), (ii) full acceleration of all stock options and other stock-based awards subject solely to time-based vesting held by Dr. Magovčević-Liebisch, and (iii) subject to Dr. Magovčević-Liebisch's copayment of premium amounts at the applicable active employees' rate and proper election to continue COBRA health coverage, payment of the portion of the premiums equal to the amount that we would have paid to provide health insurance to Dr. Magovčević-Liebisch had she remained employed with us until the earliest of (A) 18 months following termination, (B) Dr. Magovčević-Liebisch's eligibility for group medical plan benefits under any other employer's group medical plan or (C) the end of Dr. Magovčević-Liebisch's COBRA health continuation period. In addition, the CEO Agreement provides for full acceleration upon a Change in Control of all stock options and other stock-based awards held by Dr. Magovčević-Liebisch as of the effective date of the CEO Agreement that are subject solely to time-based vesting. If the payments or benefits payable to Dr. Magovčević-Liebisch in connection with a change in control would be subject to the excise tax on golden parachutes imposed under Section 4999 of the Code, then those payments or benefits will be reduced if such reduction would result in a higher net after-tax benefit to Dr. Magovčević-Liebisch.

Dr. Magovčević-Liebisch's post-employment restrictive covenants obligations pursuant to the Restrictive Covenants Agreement (as defined in the CEO Agreement) have been preserved.

Employment Agreement with Spyridon (Spyros) Papapetropoulos

Pursuant to the employment agreement with Dr. Papapetropoulos, or the CMO Agreement, Dr. Papapetropoulos will continue to serve as our Chief Medical Officer. Dr. Papapetropoulos's current annual base salary is \$396,935 and he is eligible to earn an annual bonus with a target amount equal to 30% of his base salary. Dr. Papapetropoulos's base salary upon the closing of this offering will be \$440,000, which is subject to periodic review and adjustment, and he will be eligible to earn an annual bonus with a target amount equal to 40% of his base salary. Dr. Papapetropoulos is also eligible to participate in the employee benefit plans available to our employees, subject to the terms of those plans.

Pursuant to the CMO Agreement, if Dr. Papapetropoulos's employment is terminated by us without Cause or by Dr. Papapetropoulos for Good Reason outside of the Change in Control Period (as such terms are defined in the CMO Agreement and subject to the terms and conditions therein), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, then Dr. Papapetropoulos will be entitled to (i) nine months of continuation of his then-current base salary and a pro-rated portion of his target bonus for the calendar year in which the termination occurs and (ii) subject to Dr. Papapetropoulos's copayment of premium amounts at the applicable active employees' rate and proper

[Table of Contents](#)

election to continue COBRA health coverage, payment of the portion of the premiums equal to the amount that we would have paid to provide health insurance to Dr. Papapetropoulos had he remained employed with us until the earliest of (A) nine months following termination, (B) Dr. Papapetropoulos's eligibility for group medical plan benefits under any other employer's group medical plan or (C) the end of Dr. Papapetropoulos's COBRA health continuation period.

If Dr. Papapetropoulos's employment is terminated by us without Cause or by Dr. Papapetropoulos for Good Reason within the Change in Control Period then, subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, Dr. Papapetropoulos will be entitled to (i) a lump sum cash payment equal to 1.0 times the sum of his then-current base salary (or his base salary in effect immediately prior to the Change in Control (as defined in the CMO Agreement), if higher) and his target bonus for the then-current year (or his target bonus in effect immediately prior to the Change in Control, if higher), (ii) full acceleration of all time-based stock options and other time-based stock awards held by Dr. Papapetropoulos, and (iii) subject to Dr. Papapetropoulos's copayment of premium amounts at the applicable active employees' rate and proper election to continue COBRA health coverage, payment of the portion of the premiums equal to the amount that we would have paid to provide health insurance to Dr. Papapetropoulos had he remained employed with us until the earliest of (A) 12 months following termination, (B) Dr. Papapetropoulos's eligibility for group medical plan benefits under any other employer's group medical plan or (C) the end of Dr. Papapetropoulos's COBRA health continuation period. If the payments or benefits payable to Dr. Papapetropoulos in connection with a change in control would be subject to the excise tax on golden parachutes imposed under Section 4999 of the Code, then those payments or benefits will be reduced if such reduction would result in a higher net after-tax benefit to Dr. Papapetropoulos.

Dr. Papapetropoulos's post-employment restrictive covenants obligations pursuant to the Restrictive Covenants Agreement (as defined in the CMO Agreement) have been preserved.

Employment Agreement with Jennifer Ziolkowski

Pursuant to the employment agreement with Ms. Ziolkowski, or CFO Agreement, Ms. Ziolkowski will continue to serve as our Chief Financial Officer. Ms. Ziolkowski's current annual base salary is \$375,000 and she is eligible to earn an annual bonus with a target amount equal to 35% of her base salary. Ms. Ziolkowski's base salary upon the closing of this offering will be \$420,000, which is subject to periodic review and adjustment, and she will be eligible to earn an annual bonus with a target amount equal to 40% of her base salary. Ms. Ziolkowski is also eligible to participate in the employee benefit plans available to our employees, subject to the terms of those plans.

Pursuant to the CFO Agreement, if Ms. Ziolkowski's employment is terminated by us without Cause or by Ms. Ziolkowski for Good Reason outside of the Change in Control Period (as such terms are defined in the CFO Agreement and subject to the terms and conditions therein), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, then Ms. Ziolkowski will be entitled to (i) nine months of continuation of her then-current base salary and a pro-rated portion of her target bonus for the calendar year in which the termination occurs and (ii) subject to Ms. Ziolkowski's copayment of premium amounts at the applicable active employees' rate and proper election to continue COBRA health coverage, payment of the portion of the premiums equal to the amount that we would have paid to provide health insurance to Ms. Ziolkowski had she remained employed with us until the earliest of (A) nine months following termination, (B) Ms. Ziolkowski's eligibility for group medical plan benefits under any other employer's group medical plan or (C) the end of Ms. Ziolkowski's COBRA health continuation period.

If Ms. Ziolkowski's employment is terminated by us without Cause or by Ms. Ziolkowski for Good Reason within the Change in Control Period then, subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, Ms. Ziolkowski will be entitled to (i) a lump sum cash payment equal to 1.0 times the sum of her then-current base salary (or her base salary in effect immediately prior

[Table of Contents](#)

to the Change in Control (as defined in the CFO Agreement), if higher) and her target bonus for the then-current year (or her target bonus in effect immediately prior to the Change in Control, if higher), (ii) full acceleration of all time-based stock options and other time-based stock awards held by Ms. Ziolkowski, and (iii) subject to Ms. Ziolkowski's copayment of premium amounts at the applicable active employees' rate and proper election to continue COBRA health coverage, payment of the portion of the premiums equal to the amount that we would have paid to provide health insurance to Ms. Ziolkowski had she remained employed with us until the earliest of (A) 12 months following termination, (B) Ms. Ziolkowski's eligibility for group medical plan benefits under any other employer's group medical plan or (C) the end of Ms. Ziolkowski's COBRA health continuation period. If the payments or benefits payable to Ms. Ziolkowski in connection with a change in control would be subject to the excise tax on golden parachutes imposed under Section 4999 of the Code, then those payments or benefits will be reduced if such reduction would result in a higher net after-tax benefit to Ms. Ziolkowski.

Ms. Ziolkowski's post-employment restrictive covenants obligations pursuant to the Restrictive Covenants Agreement (as defined in the CFO Agreement) have been preserved.

Employee Benefit and Equity Compensation Plans

2020 Equity Incentive Plan

Our 2020 Plan was adopted by our board of directors and approved by our stockholders on September 18, 2020 and was most recently amended on August 12, 2021. Under the 2020 Plan, we have reserved for issuance an aggregate of 3,385,720 shares of our common stock. The maximum number of shares of our common stock that may be issued pursuant to the exercise of incentive stock options under the 2020 Plan is 6,370,922 shares. The number of shares of common stock reserved for issuance and the number of shares that may be issued pursuant to the exercise of stock options are subject to adjustment in the event of any merger, consolidation, reorganization, recapitalization, reincorporation, stock dividend, dividend in property other than cash, large nonrecurring cash dividend, stock split, reverse stock split, liquidating dividend, combination of shares, exchange of shares, change in corporate structure, or other similar equity restructuring transaction.

Shares subject to awards granted under the 2020 Plan that expire or terminate without being exercised in full or that are settled in cash rather than in shares do not reduce the number of shares available for issuance under the 2020 Plan. Additionally, if any shares issued pursuant to a stock award are forfeited or repurchased because of the failure to meet a contingency or condition required to vest, then the shares that are forfeited or repurchased currently revert to and again become available for issuance under the 2020 Plan. This includes shares used to pay the exercise price of a stock award or to satisfy the tax withholding obligations related to a stock award. Following this offering, such shares will be added to the shares of common stock available for issuance under the 2021 Plan.

Our board of directors has acted as administrator of the 2020 Plan. The administrator has full power to select, from among the individuals eligible for awards, the individuals to whom awards will be granted, and to determine the specific terms and conditions of each award, subject to the provisions of the 2020 Plan. The plan administrator may delegate its authority under the 2020 Plan to a committee or committees of the board of directors and may delegate to one or more of our officers the authority to (1) designate employees (other than officers) to receive specified awards and (2) determine the number of shares subject to such awards. Persons eligible to participate in the 2020 Plan are those employees, directors and consultants of the Company or an affiliate of the Company as selected from time to time by the administrator in its discretion.

The 2020 Plan permits the granting of (1) options to purchase common stock intended to qualify as incentive stock options under Section 422 of the Internal Revenue Code of 1986, as amended, or the Code, and (2) options that do not so qualify. In addition, the 2020 Plan permits the granting of stock appreciation rights, restricted shares of common stock, restricted stock units and other stock awards. The per share exercise price of each option and stock appreciation right is set by the administrator of the 2020 plan but may not be less than 100% of the fair market value of the common stock on the date of grant. The term of each option and stock appreciation right is set by the administrator of the 2020 plan may not exceed 10 years from the date of grant.

[Table of Contents](#)

The 2020 Plan provides that upon the occurrence of a “corporate transaction,” as defined in the 2020 Plan, the board of directors may take one or more of the following actions: (1) arrange for surviving corporation or acquiring corporation to assume or continue the awards or to substitute a similar award for the stock awards, (2) arrange for the assignment of any reacquisition or repurchase rights held by the Company to the surviving corporation or acquiring corporation, (3) accelerate the vesting, in whole or in part, of any awards and provide for termination of such awards if not exercised (if applicable) at or prior to the effective time of such corporation transaction, (4) arrange for the lapse of any reacquisition or repurchase right held by the Company with respect to the award, (5) cancel or arrange for the cancellation of stock awards, to the extent not vested or exercised prior to the effective time of the corporate transaction, in exchange for cash consideration (including no consideration) as the board of directors may determine, and (6) make a payment in an amount per share equal to the excess, if any, of the value of the consideration payable per share of common stock and over any exercise price.

The board of directors may amend, suspend or terminate the 2020 Plan at any time, subject to stockholder approval where such approval is required by applicable law. The administrator of the 2020 Plan may also amend or cancel any outstanding award, provided that no amendment to an award may materially adversely affect a participant’s rights without his or her consent.

The 2020 Plan will automatically terminate upon the day before of the tenth anniversary of the earlier of date on which the 2020 Plan was initially adopted by our board of directors or the date the 2020 Plan was initially approved by our stockholders. As of November 30, 2021, options to purchase 3,083,281 shares of common stock were outstanding under the 2020 Plan. Our board of directors has determined not to make any further awards under the 2020 Plan following the closing of this offering.

2021 Stock Option and Incentive Plan

Our 2021 Plan, was adopted by our board of directors on November 16, 2021, approved by our stockholders on December 3, 2021 and will become effective upon the date immediately preceding the date on which the registration statement of which this prospectus is part is declared effective by the SEC. The 2021 Plan will replace the 2020 Plan as our board of directors has determined not to make additional awards under the 2020 Plan following the closing of our initial public offering. However, the 2020 Plan will continue to govern outstanding equity awards granted thereunder. The 2021 Plan allows us to make equity-based and cash-based incentive awards to our officers, employees, directors and consultants.

We have initially reserved 3,145,281 shares of our common stock for the issuance of awards under the 2021 Plan, or the Initial Limit. The 2021 Plan provides that the number of shares reserved and available for issuance under the 2021 Plan will automatically increase on January 1, 2022 and each January 1 thereafter, by 5% of the outstanding number of shares of our common stock on the immediately preceding December 31 or such lesser number of shares as determined by our compensation committee, or the Annual Increase. On December 28, 2021, our Compensation Committee elected not to utilize the evergreen provision under the 2021 Plan for calendar year 2022, as a result of which there was no change in the number of shares reserved and available for issuance under the 2021 Plan effective January 1, 2022. The number of shares reserved under the 2021 Plan is subject to adjustment in the event of a stock split, stock dividend or other change in our capitalization.

The shares we issue under the 2021 Plan will be authorized but unissued shares or shares that we reacquire. The shares of common stock underlying any awards under the 2021 Plan and the 2020 Plan that are forfeited, cancelled, held back upon exercise or settlement of an award to satisfy the exercise price or tax withholding, reacquired by us prior to vesting, satisfied without the issuance of stock, expire or are otherwise terminated (other than by exercise) will be added back to the shares of common stock available for issuance under the 2021 Plan.

The maximum number of shares of common stock that may be issued in the form of incentive stock options shall not exceed the Initial Limit, cumulatively increased on January 1, 2022 and on each January 1 thereafter by the lesser of the Annual Increase for such year or 1,430,650 shares of common stock.

[Table of Contents](#)

The grant date fair value of all awards made under our 2021 Plan and all other cash compensation paid by us to any non-employee director in any calendar year for services as a non-employee director shall not exceed \$1 million; provided, however, that such amount shall be \$1.25 million for the calendar year in which the applicable non-employee director is initially elected or appointed to the board of directors.

The 2021 Plan will be administered by our compensation committee. Our compensation committee has the full power to select, from among the individuals eligible for awards, the individuals to whom awards will be granted and the number of shares subject to such awards, to make any combination of awards to participants, to accelerate at any time the exercisability or vesting of any award and to determine the specific terms and conditions of each award, subject to the provisions of the 2021 Plan. Persons eligible to participate in the 2021 Plan will be those full or part-time officers, employees, non-employee directors and consultants as selected from time to time by our compensation committee in its discretion.

The 2021 Plan permits the granting of both options to purchase common stock intended to qualify as incentive stock options under Section 422 of the Code and options that do not so qualify. The option exercise price of each option will be determined by our compensation committee but generally may not be less than 100% of the fair market value of our common stock on the date of grant unless the option (i) is granted pursuant to a transaction described in, and in a manner consistent with Section 424(a) of the Code, (ii) is granted to an individual who is not subject to U.S. income tax or (iii) complies with Section 409A of the Code. The term of each option will be fixed by our compensation committee and may not exceed 10 years from the date of grant. Our compensation committee will determine at what time or times each option may be exercised.

Our compensation committee may award stock appreciation rights under the 2021 Plan subject to such conditions and restrictions as it may determine. Stock appreciation rights entitle the recipient to shares of common stock, or cash, equal to the value of the appreciation in our stock price over the exercise price. The exercise price of each stock appreciation right will be determined by our compensation committee but generally may not be less than 100% of the fair market value of our common stock on the date of grant unless the stock appreciation right (i) is granted pursuant to a transaction described in, and in a manner consistent with Section 424(a) of the Code, (ii) is granted to an individual who is not subject to U.S. income tax or (iii) complies with Section 409A of the Code. The term of each stock appreciation right will be fixed by our compensation committee and may not exceed 10 years from the date of grant. Our compensation committee will determine at what time or times each stock appreciation right may be exercised.

Our compensation committee may award restricted shares of common stock and restricted stock units to participants subject to such conditions and restrictions as it may determine. These conditions and restrictions may include the achievement of certain performance goals and/or continued employment with us through a specified vesting period. Our compensation committee may also grant shares of common stock that are free from any restrictions under the 2021 Plan. Unrestricted stock may be granted to participants in recognition of past services or for other valid consideration and may be issued in lieu of cash compensation due to such participant.

Our compensation committee may grant dividend equivalent rights to participants that entitle the recipient to receive credits for dividends that would be paid if the recipient had held a specified number of shares of common stock.

Our compensation committee may grant cash bonuses under the 2021 Plan to participants, subject to the achievement of certain performance goals.

The 2021 Plan provides that upon the effectiveness of a “sale event,” as defined in the 2021 Plan, an acquirer or successor entity may assume, continue or substitute outstanding awards under the 2021 Plan. To the extent that awards granted under the 2021 Plan are not assumed or continued or substituted by the successor entity, upon the effective time of the sale event, such awards shall terminate. In such case, except as may be otherwise provided in the relevant award certificate, all awards with time-based vesting, conditions or restrictions shall become fully vested and nonforfeitable as of the effective time of the sale event and all awards with conditions and restrictions

relating to the attainment of performance goals may become vested and nonforfeitable in connection with a sale event in the administrator's discretion or to the extent specified in the relevant award certificate. In the event of such termination, (i) individuals holding options and stock appreciation rights will be permitted to exercise such options and stock appreciation rights (to the extent exercisable) within a specified period of time prior to the sale event or (ii) we may make or provide for a payment, in cash or in kind, to participants holding vested and exercisable options and stock appreciation rights equal to the difference between the per share consideration payable to stockholders in the sale event and the exercise price of the options or stock appreciation rights and we may make or provide for a payment, in cash or in kind, to participants holding other vested awards.

Our board of directors may amend or discontinue the 2021 Plan and our compensation committee may amend or cancel outstanding awards for purposes of satisfying changes in law or any other lawful purpose, but no such action may materially and adversely affect rights under an award without the holder's consent. Certain amendments to the 2021 Plan require the approval of our stockholders. The administrator of the 2021 Plan is specifically authorized to exercise its discretion to reduce the exercise price of outstanding stock options and stock appreciation rights or effect the repricing of such awards through cancellation and re-grants without stockholder consent. No awards may be granted under the 2021 Plan after the date that is 10 years from the effective date of the 2021 Plan. No awards under the 2021 Plan have been made prior to the date of this prospectus.

2021 Employee Stock Purchase Plan

Our ESPP was adopted by our board of directors November 16, 2021, approved by our stockholders on December 3, 2021 and will become effective on the date immediately preceding the date on which the registration statement of which this prospectus forms a part is declared effective by the SEC. The ESPP is intended to qualify as an "employee stock purchase plan" within the meaning of Section 423 of the Code. The ESPP initially reserves and authorizes the issuance of up to a total of 286,127 shares of our common stock to participating employees. The ESPP provides that the number of shares reserved and available for issuance will automatically increase on January 1, 2023 and each January 1 thereafter through January 1, 2032, by the least of (i) 286,127 shares of common stock, (ii) 1% of the outstanding number of shares of common stock on the immediately preceding December 31, or (iii) such lesser number of shares of common stock as determined by the administrator of the ESPP. The number of shares reserved under the ESPP is subject to adjustment in the event of a stock split, stock dividend or other change in our capitalization.

All employees who are customarily employed by us or one of our designated subsidiaries are eligible to participate in the ESPP. However, any employee who owns 5% or more of the total combined voting power or value of all classes of our stock will not be eligible to purchase shares of common stock under the ESPP.

We may make one or more offerings each year to our employees to purchase shares under the ESPP. Offerings will usually begin on each May 1 and November 1 and will continue for six-month periods, referred to as offering periods. Each eligible employee may elect to participate in any offering by submitting an enrollment form at least 15 business days before the applicable offering date

Each employee who is a participant in the ESPP may purchase shares of our common stock by authorizing payroll deductions of up to 15% of his or her eligible compensation during an offering period. Unless the participating employee has previously withdrawn from the offering, his or her accumulated payroll deductions will be used to purchase shares of our common stock on the last business day of the offering period at a price equal to 85% of the fair market value of the shares of our common stock on the first business day or the last business day of the offering period, whichever is lower, provided that no more \$25,000 worth of common stock (or such other lesser maximum number of shares as may be established by the administrator) may be purchased by any one employee during any offering period. Under applicable tax rules, an employee may purchase no more than \$25,000 worth of shares of our common stock, valued at the start of the purchase period, under the ESPP in any calendar year.

[Table of Contents](#)

The accumulated payroll deductions of any employee who is not a participant on the last day of an offering period will be refunded. An employee's rights under the ESPP terminate upon voluntary withdrawal from the plan or when the employee ceases employment with us for any reason.

The ESPP may be terminated or amended by our board of directors at any time. An amendment that increases the number of shares of our common stock authorized under the ESPP and certain other amendments require the approval of our stockholders.

Senior Executive Cash Incentive Bonus Plan

On November 16, 2021 our board of directors adopted the Senior Executive Cash Incentive Bonus Plan, or the Bonus Plan. The Bonus Plan provides for annual cash bonus payments based upon the attainment of Company and individual performance targets established by our compensation committee. The payment targets may be related to financial and operational measures or objectives with respect to our Company, or the Corporate Performance Goals, as well as individual performance objectives.

Our compensation committee may select Corporate Performance Goals from among the following: cash flow (including, but not limited to, operating cash flow and free cash flow); research and development, publication, clinical and/or regulatory milestones; revenue; corporate revenue; earnings before interest, taxes, depreciation and amortization; net income (loss) (either before or after interest, taxes, depreciation and/or amortization); changes in the market price of our common stock; economic value-added; acquisitions or strategic transactions, including licenses, collaborations, joint ventures or promotion arrangements; operating income (loss); return on capital assets, equity, or investment; stockholder returns; return on sales; gross or net profit levels; productivity; expense efficiency; margins; operating efficiency; customer satisfaction; working capital; earnings (loss) per share of our common stock; sales or market shares; operating income and/or net annual recurring revenue; or any other performance goal as selected by the compensation committee, any of which may be measured in absolute terms, as compared to any incremental increase, in terms of growth, as compared to results of a peer group, against the market as a whole, compared to applicable market indices and/or measured on a pre-tax or post-tax basis.

Each executive officer who is selected to participate in the Bonus Plan will have a target bonus opportunity set for each performance period. The bonus formulas will be adopted in each performance period by the compensation committee and communicated to each executive. The Corporate Performance Goals will be measured at the end of each performance period after our financial reports have been published or such other appropriate time as the compensation committee determines. If the Corporate Performance Goals and individual performance objectives are met, payments will be made as soon as practicable following the end of each performance period, but no later than 74 days after the end of the fiscal year in which such performance period ends. Subject to the rights contained in any agreement between the executive officer and us, an executive officer must be employed by us on the bonus payment date to be eligible to receive a bonus payment. The Bonus Plan also permits the compensation committee to approve additional bonuses to executive officers in its sole discretion.

401(k) Plan

We maintain a retirement savings plan, or 401(k) plan, that is intended to qualify for favorable tax treatment under Section 401(a) of the Code, and contains a cash or deferred feature that is intended to meet the requirements of Section 401(k) of the Code. U.S. employees who are at least 21 years of age are generally eligible to participate in the 401(k) plan, subject to certain criteria. Participants may make pre-tax and certain after-tax (Roth) salary deferral contributions to the plan from their eligible earnings up to the statutorily prescribed annual limit under the Code. Participants who are 50 years of age or older may contribute additional amounts based on the statutory limits for catch-up contributions. Participant contributions are held in trust as required by law. An employee's interest in his or her salary deferral contributions is 100% vested when contributed. We have the ability to make matching and discretionary contributions under the plan but did not make any contributions to the 401(k) plan in 2021.

DIRECTOR COMPENSATION

The following table presents the total compensation for each person who served as a non-employee member of our board of directors during the year ended December 31, 2021. Other than as set forth in the table and described more fully below, we did not pay any compensation, make any equity awards or non-equity awards to, or pay any other compensation to any of the non-employee members of our board of directors in 2021. We reimburse non-employee members of our board of directors for reasonable travel and out-of-pocket expenses incurred in attending meetings of our board of directors and committees of our board of directors.

<u>Name</u>	<u>Fees Earned or Paid in Cash (\$)</u>	<u>Option Awards (\$)(1)</u>	<u>All Other Compensation (\$)</u>	<u>Total (\$)</u>
Cheryl Blanchard, PhD(2)	25,000	148,901	—	173,901
Bruce Booth, PhD(3)	—	—	—	—
Shaan Gandhi, MD, PhD(4)	—	—	—	—
Gerhard Koenig, PhD(5)	25,000	148,901	—	173,901
Clay Thorp(6)	—	—	—	—
Stefan Vitorovic (7)	—	—	—	—

- (1) The amounts reported represent the aggregate grant date fair value of the stock option awards granted to our directors during 2021, calculated in accordance with FASB ASC Topic 718. Such grant date fair values do not take into account any estimated forfeitures related to service-based vesting. A discussion of the assumptions used in determining grant date fair value may be found in Note 6 to our financial statements for the year ended December 31, 2021, included elsewhere in this prospectus. The amounts reported in this column reflect the accounting cost for these stock option awards and do not correspond to the actual economic value that may be received by our directors upon the exercise of the stock option awards or any sale of the underlying shares.
- (2) Pursuant to the director offer letter we entered into with Dr. Blanchard as of November 11, 2020, Dr. Blanchard is eligible to receive an annual retainer fee of \$25,000 for her service on our board of directors. As of December 31, 2021, Dr. Blanchard held options to purchase an aggregate of 61,674 shares of common stock.
- (3) As of December 31, 2021, Dr. Booth did not hold any outstanding equity awards.
- (4) As of December 31, 2021, Mr. Gandhi did not hold any outstanding equity awards.
- (5) Pursuant to the director offer letter we entered into with Dr. Koenig as of July 31, 2020, Dr. Koenig is eligible to receive an annual retainer of \$25,000 for his service on our board of directors. As of December 31, 2021, Dr. Koenig held options to purchase an aggregate of 61,673 shares of common stock.
- (6) As of December 31, 2021, Mr. Thorp did not hold any outstanding equity awards.
- (7) As of December 31, 2021, Mr. Vitorovic did not hold any outstanding equity awards.

[Table of Contents](#)

Non-Employee Director Compensation Policy

On November 16, 2021, our board of directors adopted the non-employee director compensation policy that will become effective upon the effectiveness of the registration statement of which this prospectus is a part and will be designed to enable us to attract and retain, on a long-term basis, highly qualified non-employee directors. Under the policy, each director who is not an employee will be paid cash compensation from and after the completion of this offering, as set forth below:

	<u>Annual Retainer</u>
Board of Directors:	
Members	\$ 35,000
Additional retainer for non-executive chair	\$ 30,000
Audit Committee:	
Members (other than chair)	\$ 7,500
Retainer for chair	\$ 15,000
Compensation Committee:	
Members (other than chair)	\$ 5,000
Retainer for chair	\$ 10,000
Nominating and Corporate Governance Committee:	
Members (other than chair)	\$ 4,000
Retainer for chair	\$ 8,000

Each non-employee director may elect to receive the entirety (but not a portion) of the cash retainer in the form of a stock option to purchase common stock of the Company with an aggregate value equal to the amount of the cash retainer to be received by such non-employee director (the "Retainer Grant"). Such Retainer Grant will vest in four equal quarterly installments commencing on the date of grant, subject to the director's continued service with the Company through each applicable vesting date.

In addition, the non-employee director compensation policy provides that, upon initial election to our board of directors, each non-employee director will be granted a stock option award to purchase a number of shares equal to 0.086% of the number of shares of the Company's common stock outstanding on the grant date, referred to as the Initial Grant, subject to the maximum annual compensation limits set forth in the policy and such other limits as may be set forth in the 2021 Plan. The Initial Grant will vest in equal monthly installments over three years from the date of grant, subject to continued service through the applicable vesting date. Furthermore, on the date of each annual meeting of stockholders following the completion of this offering, each non-employee director who continues as a non-employee director following such meeting will be granted a stock option to purchase a number of shares equal to 0.043% of the number of shares of the Company's common stock outstanding on the grant date, referred to as the Annual Grant, subject to the maximum annual compensation limits set forth in the policy and such other limits as may be set forth in the 2021 Plan. The Annual Grant will vest in full upon the earlier of (i) the first anniversary of the date of grant or (ii) the date of the next Annual Meeting, subject to continued service through the applicable vesting date. All outstanding Retainer Grants, Initial Grants and Annual Grants will become fully vested and exercisable upon the effective time of a sale event.

We will reimburse all reasonable out-of-pocket expenses incurred by non-employee directors in attending meetings of the board of directors and committees thereof.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

The following is a description of transactions or series of transactions since our incorporation in June 2020, to which we were or will be a party, in which:

- the amount involved in the transaction exceeds, or will exceed, the lesser of \$120,000 or one percent of the average of the Company's total assets for the last two completed fiscal years; and
- in which any of our executive officers, directors or holder of five percent or more of any class of our capital stock, including their immediate family members or affiliated entities, had or will have a direct or indirect material interest.

Compensation arrangements for our named executive officers and our directors are described elsewhere in this prospectus under "Executive Compensation" and "Director Compensation."

Private Placement of Securities

Common Stock

In June and July 2020, we entered into several Common Stock Purchase Agreements pursuant to which we agreed to issue and sell 1,748,879 shares of our common stock, some of which are subject to vesting schedules, at a price of \$0.0001 per share to certain investors. The following table summarizes purchases of our common stock by related persons:

<u>Participant</u>	<u>Affiliated Director(s) or Officer(s)</u>	<u>Shares of Common Stock</u>	<u>Total Purchase Price</u>
Ivana Magovčević-Liebisch, PhD, JD ⁽¹⁾	—	180,297	\$ 50.00
Atlas Venture Fund XII, L.P. ⁽²⁾	Bruce Booth, D.Phil	1,442,376	\$ 399.99

- (1) Dr. Magovcevic-Liebisch is the President and Chief Executive Officer of the Company and a member of our board of directors.
- (2) Such entity is affiliated with Atlas Venture, which holds five percent or more of our capital stock. Dr. Booth is a partner at Atlas Venture and a member of our board of directors.

Simple Agreements for Future Equity

In July 2020, we entered into a simple agreement for future equity, or the Atlas SAFE, with Atlas Venture Fund XII, L.P. pursuant to which we received \$5 million in exchange for our agreement to issue Atlas Venture Fund XII, L.P. shares of our preferred stock upon the occurrence of subsequent financings of our preferred stock. Atlas Venture Fund XII, L.P. is affiliated with Atlas Venture, which holds five percent or more of our capital stock. Dr. Booth is a partner at Atlas Venture and a member of our board of directors.

Series A Preferred Stock Financings

First Closing

In September 2020, in connection with the initial closing of our Series A preferred stock financing, we sold an aggregate of 11,778,560 shares of our Series A preferred stock at a purchase price of \$2.547 per share for an aggregate purchase price of approximately \$30.0 million (including \$5.0 million of the Atlas SAFE, which was converted into shares of Series A preferred stock). Additionally, we issued 6,928,566 shares of Series A preferred stock pursuant to our agreements with Amgen Inc. See "Business—Exclusive License Agreement with Amgen Inc." Each share of our Series A preferred stock will automatically convert into one share of our common

[Table of Contents](#)

stock immediately prior to the completion of this offering. The following table summarizes purchases of our Series A preferred stock by related persons:

Participant	Affiliated Director(s) or Officer(s)	Shares of Series A Preferred Stock	Total Purchase Price
Northpond Ventures, LP ⁽¹⁾	Shaan Gandhi, MD, PhD, MBA	4,711,425	\$ 11,999,999.48
Atlas Venture Fund XII, L.P. ⁽²⁾	Bruce Booth, D.Phil	4,711,424 ⁽³⁾	\$ 11,999,996.93 ⁽³⁾
Hatteras Venture Partners VI, LP ⁽⁴⁾	Clay Bernardin Thorp	1,531,213	\$ 3,899,999.51
Amgen Inc. ⁽⁵⁾	—	6,928,566	—

- (1) Such entity is affiliated with Northpond Ventures, which holds five percent or more of our capital stock. Dr. Gandhi is a director at Northpond Ventures and a member of our board of directors.
- (2) Such entity is affiliated with Atlas Venture, which holds five percent or more of our capital stock. Dr. Booth is a partner at Atlas Venture and a member of our board of directors.
- (3) At the time of the initial closing of our Series A preferred stock financing, the \$5.0 million Atlas SAFE converted into 1,963,093 Series A Preferred Stock.
- (4) Hatteras Venture Partners VI, LP is a holder of five percent or more of our capital stock. Mr. Thorp is a general partner at Hatteras Venture Partners and a member of our board of directors.
- (5) Amgen Inc. is a holder of five percent or more of our capital stock.

Milestone Closing

In May 2021, in connection with the milestone closing of our Series A preferred stock financing, we sold an aggregate of 7,852,373 shares of Series A preferred stock at a purchase price of \$2.547 per share for an aggregate purchase price of approximately \$20.0 million. Additionally, we issued 1,963,093 shares of Series A preferred stock pursuant to our agreements with Amgen Inc. See “Business—Exclusive License Agreement with Amgen Inc.” Each share of our Series A preferred stock will automatically convert into one share of our common stock immediately prior to the completion of this offering. The following table summarizes purchases of our Series A preferred stock by related persons:

Participant	Affiliated Director(s) or Officer(s)	Shares of Series A Preferred Stock	Total Purchase Price
Northpond Ventures, LP ⁽¹⁾	Shaan Gandhi, MD, PhD, MBA	3,140,950	\$ 7,999,999.65
Atlas Venture Fund XII, L.P. ⁽²⁾	Bruce Booth, D.Phil	3,140,950	\$ 7,999,999.65
Hatteras Venture Partners VI, LP ⁽³⁾	Clay Bernardin Thorp	1,020,808	\$ 2,599,997.98
Amgen Inc. ⁽⁴⁾	—	1,963,093	—

- (1) Such entity is affiliated with Northpond Ventures, which holds five percent or more of our capital stock. Dr. Gandhi is a director at Northpond Ventures and a member of our board of directors.
- (2) Such entity is affiliated with Atlas Venture, which holds five percent or more of our capital stock. Dr. Booth is a partner at Atlas Venture and a member of our board of directors.
- (3) Hatteras Venture Partners VI, LP is a holder of five percent or more of our capital stock. Mr. Thorp is a general partner at Hatteras Venture Partners and a member of our board of directors.
- (4) Amgen Inc. is a holder of five percent or more of our capital stock.

Series B Preferred Stock Financing

In August 2021, we sold an aggregate of 25,657,096 shares of our Series B preferred stock at a purchase price of \$3.5078 per share for an aggregate purchase price of approximately \$90.0 million. Each share of our Series B preferred stock will automatically convert into one share of our common stock immediately prior to the

[Table of Contents](#)

completion of this offering. The following table summarizes purchases of our Series B preferred stock by related persons:

<u>Participant</u>	<u>Affiliated Director(s) or Officer(s)</u>	<u>Shares of Series B Preferred Stock</u>	<u>Total Purchase Price</u>
Northpond Ventures II, LP ⁽¹⁾	Shaan Gandhi, MD, PhD, MBA	2,850,790	\$ 10,000,001.17
Atlas Venture Opportunity Fund I, L.P. ⁽²⁾	Bruce Booth, D.Phil	2,850,789	\$ 9,999,997.66
Hatteras Venture Partners VI, LP ⁽³⁾	Clay Bernardin Thorp	926,506	\$ 3,249,997.75
Vida Ventures III, LP ⁽⁴⁾	Stefan Vitorovic, MS, MBA	21,310	\$ 74,751.22
Vida Ventures III-A, LP	Stefan Vitorovic, MS, MBA	9,243,756	\$ 32,425,247.30

- (1) Such entity is affiliated with Northpond Ventures, which holds five percent or more of our capital stock. Dr. Gandhi is a director at Northpond Ventures and a member of our board of directors.
- (2) Such entity is affiliated with Atlas Venture, which holds five percent or more of our capital stock. Dr. Booth is a partner at Atlas Venture and a member of our board of directors.
- (3) Hatteras Venture Partners VI, LP is a holder of five percent or more of our capital stock. Mr. Thorp is a general partner at Hatteras Venture Partners and a member of our board of directors.
- (4) Such entity is affiliated with Vida Ventures, which holds five percent or more of our capital stock. Mr. Vitorovic is a co-founder and managing director at Vida Ventures and a member of our board of directors.

Agreements with Our Stockholders

Amgen Agreements

In July 2020, we entered into an exclusive license agreement with Amgen Inc., or Amgen, pursuant to which we have been granted an exclusive, royalty-bearing license to certain intellectual property rights owned or controlled by Amgen, to commercially develop, manufacture, use, distribute and sell therapeutic products containing compounds that bind to TREM2. Amgen is a holder of five percent or more of our capital stock. For more information, see the section entitled “Business—Exclusive License Agreement with Amgen Inc.”

Atlas Lease Agreements

In July and September 2020, we entered into use and occupancy agreements for office space with Atlas Venture Life Science Advisors, LLC, or Atlas, an affiliate of Atlas Venture, an owner of more than five percent of our outstanding capital stock. We early terminated these leases in November 2020.

Additionally, on February 1, April 12, and July 1, 2021, we entered into three use and occupancy agreements for office space with Atlas. In September 2021, we terminated these three agreements, effective on November 5, 2021 for the February 1 and April 12, 2021 leases and effective on October 1, 2021 for the July 1, 2021 lease. On April 1, 2021, we entered into a use and occupancy agreement for laboratory space with Atlas. This lease expires on April 1, 2022 with an option to continue thereafter on a month to month basis unless terminated by either party upon written notice.

The total rent payment paid to Atlas Venture Life Science Advisors, LLC for the period from June 22, 2020 (inception) to December 31, 2020 and in the nine months ended September 30, 2021 was \$13 thousand and \$113 thousand, respectively.

Agreements with Other Stockholders

In connection with our preferred stock financings, we entered into an investors’ rights agreement, voting agreement and right of first refusal agreement, in each case, with the purchasers of our preferred stock and certain holders of our common stock.

[Table of Contents](#)

Our amended and restated investors' rights agreement (Investor Rights Agreement), provides certain holders of our preferred stock with a participation right to purchase their pro rata share of new securities that we may propose to sell and issue, subject to certain exceptions. Such participation right will terminate upon the closing of this offering. The Investor Rights Agreement further provides certain holders of our capital stock with the right to demand that we file a registration statement, subject to certain limitations, and to request that their shares be covered by a registration statement that we are otherwise filing. See "Description of Capital Stock—Registration Rights" appearing elsewhere in this prospectus, for additional information regarding such registration rights.

Our amended and restated voting agreement (Voting Agreement) provides for drag-along rights in respect of sales by certain holders of our capital stock. The Voting Agreement also contains provisions with respect to the elections of our board of directors and its composition. The rights under the Voting Agreement will terminate upon the closing of this offering.

Our amended and restated right of first refusal and co-sale agreement (Right of First Refusal and Co-Sale Agreement) provides for rights of first refusal and co-sale rights in respect of sales by certain holders of our capital stock. The rights under the Right of First Refusal and Co-Sale Agreement will terminate upon the closing of this offering.

Indemnification Agreements

In connection with this offering, we intend to enter into new agreements to indemnify our directors and executive officers. These agreements will, among other things, require us to indemnify these individuals for certain expenses (including attorneys' fees), judgments, fines and settlement amounts reasonably incurred by such person in any action or proceeding, including any action by or in our right, on account of any services undertaken by such person on behalf of our company or that person's status as a member of our board of directors to the maximum extent allowed under Delaware law.

Directed Share Program

At our request, the underwriters have reserved for sale at the initial public offering price per share up to % of the shares of common stock offered by the prospectus, to certain individuals through a directed share program, including our directors, officers, employees, business associates and certain other individuals identified by us. See "Underwriting—Directed Share Program."

Policies for Approval of Related Party Transactions

Our board of directors reviews and approves transactions with directors, officers and holders of 5% or more of our voting securities and their affiliates, each a related party. Prior to this offering, the material facts as to the related party's relationship or interest in the transaction are disclosed to our board of directors prior to their consideration of such transaction, and the transaction is not considered approved by our board of directors unless a majority of the directors who are not interested in the transaction approve the transaction. Further, when stockholders are entitled to vote on a transaction with a related party, the material facts of the related party's relationship or interest in the transaction are disclosed to the stockholders, who must approve the transaction in good faith.

In connection with this offering, we will adopt a written related party transactions policy that all such transactions must be approved by our audit committee. This policy will become effective on the date on which the registration statement of which this prospectus is part is declared effective by the SEC.

PRINCIPAL STOCKHOLDERS

The following table sets forth certain information known to us regarding beneficial ownership of our capital stock as of November 30, 2021, and as adjusted to reflect the sale of common stock offered by us in this offering, for:

- each person or group of affiliated persons known by us to be the beneficial owner of more than 5% of our capital stock;
- each of our named executive officers;
- each of our directors; and
- all of our executive officers and directors as a group.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to securities. Under those rules, beneficial ownership includes any shares as to which the individual or entity has sole or shared voting power or investment power. Except as noted by footnote, and subject to community property laws where applicable, we believe, based on the information provided to us, that the persons and entities named in the table below have sole voting and investment power with respect to all common stock shown as beneficially owned by them. The table below excludes any purchases that may be made through our directed share program or otherwise in this offering. See “Underwriting—Directed Share Program.”

The percentage of beneficial ownership prior to this offering in the table below is based on 21,259,816 shares of common stock (which includes 234,385 shares of restricted common stock) deemed to be outstanding as of November 30, 2021, assuming the conversion of all outstanding shares of our Series A and Series B convertible preferred stock immediately prior to the closing of this offering, and assuming an initial public offering price of \$16.00 per share, which is the midpoint of the offering range set forth on the cover page of this prospectus, and the percentage of beneficial ownership after this offering in the table below is based on 28,259,816 shares of common stock assumed to be outstanding after the closing of the offering. The information in the table below assumes no exercise of the underwriters’ option to purchase additional shares.

Unless otherwise noted below, the address for each beneficial owner listed in the table below is c/o Vigil Neuroscience, Inc., 1 Broadway, 7th Floor, Suite 07-300 Cambridge, MA 02142.

Name and Address of Beneficial Owner:	Shares Beneficially Owned Prior to Offering		Shares Beneficially Owned After Offering	
	Number	Percentage	Number	Percentage
Entities affiliated with Atlas Venture ⁽¹⁾	5,301,874	24.94%	5,301,874	18.76%
Entities affiliated with Northpond Ventures ⁽²⁾	3,859,498	18.15%	3,859,498	13.66%
Entities affiliated with Vida Ventures ⁽³⁾	3,340,929	15.71%	3,340,929	11.82%
Amgen Inc. ⁽⁴⁾	3,206,281	15.08%	3,206,281	11.35%
Hatteras Venture Partners VI, LP ⁽⁵⁾	1,254,335	5.90%	1,254,335	4.44%
Named Executive Officers and Directors:				
Ivana Magovčević-Liebisch, PhD, JD, <i>Chief Executive Officer and Director</i> ⁽⁶⁾	406,687	1.89%	406,687	1.43%
Jennifer Ziolkowski, CPA, <i>Chief Financial Officer</i> ⁽⁷⁾	11,357	*	11,357	*
Spyros Papapetropoulos, MD, PhD, <i>Chief Medical Officer</i> ⁽⁸⁾	57,466	*	57,466	*
Bruce Booth, D.Phil, <i>Chairman</i>	5,301,874	24.94%	5,301,874	18.76%
Cheryl Renee Blanchard, PhD, <i>Director</i> ⁽⁹⁾	11,109	*	11,109	*
Clay Bernardin Thorp, <i>Director</i>	—	—	—	—
Gerhard Koenig, PhD, <i>Director</i> ⁽¹⁰⁾	14,799	*	14,799	*
Shaan Gandhi, MD, PhD, MBA, <i>Director</i>	—	—	—	—
Stefan Vitorovic, MS, MBA, <i>Director</i>	—	—	—	—
All executive officers and directors as a group (10 persons)⁽¹¹⁾	5,835,418	27.02%	5,835,418	20.41%

Table of Contents

* Less than one percent.

- (1) Consists of (i) 1,442,376 shares of common stock held by Atlas Venture Fund XII, L.P., or Atlas Fund XII, (ii) 2,831,520 shares of common stock issuable upon conversion of Series A Preferred Stock held by Atlas Fund XII, and (iii) 1,027,978 shares of common stock issuable upon conversion of Series B Preferred Stock held by Atlas Venture Opportunity Fund I, L.P., or AVAO I. Atlas Venture Associates XII, L.P., or AVA XII LP, is the general partner of Atlas Fund XII. Atlas Venture Associates XII, LLC, or AVA XII LLC, is the general partner of AVA XII LP. Bruce Booth is a member of AVA XII LLC. Each of AVA XII LP, AVA XII LLC and Dr. Booth may be deemed to beneficially own the shares held by Atlas Fund XII. Each of AVA XII LP, AVA XII LLC and Dr. Booth expressly disclaim beneficial ownership of the securities owned by Atlas Fund XII, except to the extent of its pecuniary interest therein, if any. Atlas Venture Associates Opportunity I, L.P., or AVAO LP, is the general partner of AVAO I. Atlas Venture Associates Opportunity I, LLC, or AVAO LLC, is the general partner of AVAO LP. Dr. Booth is a member of AVAO LLC. Each of AVAO LP, AVAO LLC and Dr. Booth may be deemed to beneficially own the shares held by AVAO I. Each of AVAO LP, AVAO LLC and Dr. Booth expressly disclaim beneficial ownership of the securities owned by AVAO I, except to the extent of its pecuniary interest therein, if any. The address for each of these entities and individuals is 300 Technology Square, 8th Floor, Cambridge, MA 02139.
- (2) Consists of (i) 2,831,520 shares of common stock issuable upon conversion of Series A Preferred Stock held by Northpond Ventures, LP and (ii) 1,027,978 shares of common stock issuable upon conversion of Series B Preferred Stock held by Northpond Ventures II, LP. The general partner of Northpond Ventures, LP is Northpond Ventures GP, LLC, or Northpond GP. The general partner of Northpond Ventures II, LP is Northpond Ventures II GP, LLC, or Northpond II GP. Michael P. Rubin is the managing member of Northpond GP and Northpond II GP. Each of Northpond GP and Michael Rubin may be deemed to beneficially own the shares held by Northpond Ventures, LP, and each of Northpond II GP and Michael Rubin may be deemed to beneficially own the shares held by Northpond II GP. The address for each of these entities is 7500 Old Georgetown Rd, Suite 850, Bethesda, MD 20814.
- (3) Consists of (i) 7,684 shares of common stock issuable upon conversion of Series B Preferred Stock held by Vida Ventures III-A, L.P. and (ii) 3,333,245 shares of common stock issuable upon conversion of Series B Preferred Stock held by Vida Ventures III, L.P. Vida Ventures III-A, L.P. and Vida Ventures III, L.P. are collectively referred to as the "Vida Funds." Vida Ventures GP III, L.L.C., or Vida GP, is the general partner of each of the Vida Funds. Mr. Vitorovic, a member of our board of directors, is a managing member of Vida GP. Each of Vida GP and Mr. Vitorovic may be deemed to have voting and dispositive power with respect to the shares owned by the Vida Funds. Each of Vida GP and Mr. Vitorovic disclaims beneficial ownership of such shares, except to the extent of their respective pecuniary interests therein. The address for each of these entities and individuals is 40 Broad Street, Suite 201, Boston, MA 02109.
- (4) Consists of 3,206,281 shares of common stock issuable upon conversion of convertible Series A Preferred Stock held by Amgen Inc. issued in connection with a license agreement. The address of Amgen Inc. is One Amgen Center Drive, Thousand Oaks, CA 91320.
- (5) Consists of (i) 920,243 shares of common stock issuable upon conversion of Series A Preferred Stock and (ii) 334,092 shares of common stock issuable upon conversion of Series B Preferred Stock held by Hatteras Venture Partners VI, LP. Hatteras Venture Advisors VI, LLC, or HVA VI, is the general partner of Hatteras Venture Partners VI, LP. Christy Shaffer, John Crumpler, Clay Bernardin Thorp, a member of our board of directors, Michael Dial, Jeffrey Terrell, Douglas Reed and Robert A. Ingram are management members of HVA VI. Each of HVA VI and Christy Shaffer, John Crumpler, Clay Bernardin Thorp, Michael Dial, Jeffrey Terrell, Douglas Reed and Robert A. Ingram may be deemed to beneficially own the shares held by Hatteras Venture Partners VI, LP. Each of HVA VI and Christy Shaffer, John Crumpler, Clay Bernardin Thorp, Michael Dial, Jeffrey Terrell, Douglas Reed and Robert A. Ingram expressly disclaim beneficial ownership of the securities owned by Hatteras Venture Partners VI, LP, except to the extent of its, his or her pecuniary interest therein, if any. The address for each of these entities and individuals is 280 S. Mangum St., Suite 350, Durham, NC 27701.

Table of Contents

- (6) Consists of (i) 198,687 shares of common stock held by Dr. Magovčević-Liebisch and (ii) 1,028,745 shares subject to options held by Dr. Magovčević-Liebisch, of which 208,000 are vested and exercisable within 60 days of November 30, 2021.
- (7) Consists of 287,577 shares subject to options held by Ms. Ziolkowski, of which 11,357 are vested and exercisable within 60 days of November 30, 2021.
- (8) Consists of 293,004 shares subject to options held by Dr. Papapetropoulos, of which 57,446 are vested and exercisable within 60 days of November 30, 2021.
- (9) Consists of 61,674 shares subject to options held by Dr. Blanchard, of which 11,109 are vested and exercisable within 60 days of November 30, 2021.
- (10) Consists of 61,673 shares subject to options held by Dr. Koenig, of which 14,799 are vested and exercisable within 60 days of November 30, 2021.
- (11) See notes (6) through (10) above; also includes options to purchase 148,019 shares of common stock held by Evan A. Thackaberry, the Company's SVP, Head of Early Development, of which 32,126 are exercisable within 60 days of November 30, 2021.

DESCRIPTION OF CAPITAL STOCK

The following descriptions are summaries of the material terms of our third amended and restated certificate of incorporation, which will be effective immediately prior to the closing of this offering and amended and restated bylaws, which will be effective upon the effectiveness of the registration statement of which this prospectus is a part. The descriptions of the common stock and preferred stock give effect to changes to our capital structure that will occur immediately prior to the completion of this offering. We refer in this section to our third amended and restated certificate of incorporation as our certificate of incorporation, and we refer to our amended and restated bylaws as our bylaws.

General

Upon completion of this offering, our authorized capital stock will consist of 150,000,000 shares of common stock, par value \$0.0001 per share, and 10,000,000 shares of preferred stock, par value \$0.0001 per share, all of which shares of preferred stock will be undesignated.

As of November 30, 2021, 21,259,816 shares of our common stock were outstanding and held by 27 stockholders of record. This amount assumes the conversion of all outstanding shares of our preferred stock into common stock, which will occur immediately prior to the closing of this offering.

Common Stock

The holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of the stockholders. The holders of our common stock do not have any cumulative voting rights. Holders of our common stock are entitled to receive ratably any dividends declared by our board of directors out of funds legally available for that purpose, subject to any preferential dividend rights of any outstanding preferred stock. Our common stock has no preemptive rights, conversion rights or other subscription rights or redemption or sinking fund provisions.

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in all assets remaining after payment of all debts and other liabilities and any liquidation preference of any outstanding preferred stock. The shares to be issued by us in this offering will be, when issued and paid for, validly issued, fully paid and non-assessable.

Preferred Stock

Immediately prior to the completion of this offering, all outstanding shares of our preferred stock will be converted into shares of our common stock. Upon the consummation of this offering, our board of directors will have the authority, without further action by our stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting, or the designation of, such series, any or all of which may be greater than the rights of common stock. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon our liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of our Company or other corporate action. Immediately after consummation of this offering, no shares of preferred stock will be outstanding, and we have no present plan to issue any shares of preferred stock.

Options

As of December 30, 2021, we had outstanding options under our 2020 Plan to purchase an aggregate of 3,089,065 shares of our common stock, with a weighted-average exercise price of \$4.52 per share.

Registration Rights

Upon the completion of this offering, certain holders of our common stock, including those issuable upon the conversion of preferred stock, will be entitled to rights with respect to the registration of these securities under the Securities Act. These rights are provided under the terms of an investors' rights agreement between us and the holders of our preferred stock. The investors' rights agreement includes demand registration rights, short-form registration rights and piggyback registration rights. All fees, costs and expenses of underwritten registrations under this agreement will be borne by us and all selling expenses, including underwriting discounts and selling commissions, will be borne by the holders of the shares being registered.

Demand Registration Rights

Beginning six months after the completion of this offering, certain holders of our common stock, including those issuable upon the conversion of shares of our preferred stock upon closing of this offering, will be entitled to demand registration rights. Under the terms of the investors' rights agreement, we will be required, upon the written request of a majority of holders of the registerable securities then outstanding that would result in an aggregate offering price of at least \$10 million, to file a registration statement on Form S-1 with respect to at least 40% of the registrable securities then outstanding and to use commercially reasonable efforts to effect the registration of all or a portion of these shares for public resale.

Short-form Registration Rights

Upon the completion of this offering, certain holders of our common stock, including those issuable upon the conversion of shares of our preferred stock upon closing of this offering, are also entitled to short-form registration rights. Pursuant to the investors' rights agreement, if we are eligible to file a registration statement on Form S-3, upon the written request of at least 20% in interest of these holders to sell registrable securities at an aggregate price of at least \$3 million, we will be required to use commercially reasonable efforts to effect a registration of such shares. We are required to effect only two registrations in any twelve month period pursuant to this provision of the investor rights agreement.

Piggyback Registration Rights

Upon the completion of this offering, certain holders of our common stock, including those issuable upon the conversion of shares of our preferred stock upon closing of this offering, are entitled to piggyback registration rights. If we register any of our securities either for our own account or for the account of other security holders, the holders of these shares are entitled to include their shares in the registration. Subject to certain exceptions contained in the investors' rights agreement, we and the underwriters may limit the number of shares included in the underwritten offering to the number of shares which we and the underwriters determine in our sole discretion will not jeopardize the success of the offering.

Indemnification

Our investors' rights agreement contains customary cross-indemnification provisions, under which we are obligated to indemnify holders of registrable securities in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them.

Expiration of Registration Rights

The demand registration rights and short-form registration rights granted under the investor rights agreement will terminate on the fifth anniversary of the completion of this offering.

Anti-takeover Effects of Our Certificate of Incorporation and Bylaws and Delaware Law

Our certificate of incorporation and bylaws include a number of provisions that may have the effect of delaying, deferring or preventing another party from acquiring control of us and encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our board of directors rather than pursue non-negotiated takeover attempts. These provisions include the items described below.

Board Composition and Filling Vacancies

Our certificate of incorporation will provide for the division of our board of directors into three classes serving staggered three-year terms, with one class being elected each year. Our certificate of incorporation also will provide that directors may be removed only for cause and then only by the affirmative vote of the holders of two-thirds or more of the shares then entitled to vote at an election of directors. Furthermore, any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of our board, may only be filled by the affirmative vote of a majority of our directors then in office even if less than a quorum. The classification of directors, together with the limitations on removal of directors and treatment of vacancies, has the effect of making it more difficult for stockholders to change the composition of our board of directors.

No Written Consent of Stockholders

Our certificate of incorporation provides that all stockholder actions are required to be taken by a vote of the stockholders at an annual or special meeting, and that stockholders may not take any action by written consent in lieu of a meeting. This limit may lengthen the amount of time required to take stockholder actions and would prevent the amendment of our bylaws or removal of directors by our stockholders without holding a meeting of stockholders.

Meetings of Stockholders

Our certificate of incorporation and bylaws provide that only a majority of the members of our board of directors then in office may call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders. Our bylaws limit the business that may be conducted at an annual meeting of stockholders to those matters properly brought before the meeting.

Advance Notice Requirements

Our bylaws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. Our bylaws specify the requirements as to form and content of all stockholders' notices. These requirements may preclude stockholders from bringing matters before the stockholders at an annual or special meeting.

Amendment to Certificate of Incorporation and Bylaws

Any amendment of our certificate of incorporation must first be approved by a majority of our board of directors, and if required by law or our certificate of incorporation, must thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment and a majority of the outstanding shares of each class entitled to vote thereon as a class, except that the amendment of the provisions relating to stockholder action,

board composition, and limitation of liability must be approved by not less than two-thirds of the outstanding shares entitled to vote on the amendment, and not less than two-thirds of the outstanding shares of each class entitled to vote thereon as a class. Our bylaws may be amended by the affirmative vote of a majority of the directors then in office, subject to any limitations set forth in the bylaws; and may also be amended by the affirmative vote of a majority of the outstanding shares entitled to vote on the amendment, voting together as a single class, except that the amendment of the provisions relating to notice of stockholder business and nominations and special meetings must be approved by not less than two-thirds of the outstanding shares entitled to vote on the amendment, and not less than two-thirds of the outstanding shares of each class entitled to vote thereon as a class, or, if our board of directors recommends that the stockholders approve the amendment, by the affirmative vote of the majority of the outstanding shares entitled to vote on the amendment, in each case voting together as a single class.

Undesignated Preferred Stock

Our certificate of incorporation provides for 10,000,000 authorized shares of preferred stock. The existence of authorized but unissued shares of preferred stock may enable our board of directors to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of our stockholders, our board of directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our certificate of incorporation grants our board of directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

Choice of Forum

Our bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any state law claims for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, and employees to us or our stockholders, (3) any action asserting a claim arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws (including the interpretation, validity or enforceability thereof), or (4) any action asserting a claim that is governed by the internal affairs doctrine; provided, however, that the this provision shall not apply to any causes of action arising under the Securities Act or Exchange Act. In addition, our bylaws provide that, unless we consent in writing to the selection of an alternative forum, the United States District Court for the District of Massachusetts shall be the sole and exclusive forum for resolving any complaint asserting a cause or causes of action arising under the Securities Act, including all causes of action asserted against any defendants to such complaint. For the avoidance of doubt, this provision is intended to benefit and may be enforced by us, our officers and directors, the underwriters to any offering giving rise to such complaint, and any other professional entity whose profession gives authority to a statement made by that person or entity and who has prepared or certified any part of the documents underlying the offering. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions, and there can be no assurance that such provisions will be enforced by a court in those other jurisdictions. Any person or entity purchasing or otherwise acquiring any interest in our securities shall be deemed to have notice of and consented to these forum provisions. These forum provisions may impose additional costs on stockholders, may limit our stockholders' ability to bring a claim in a forum they find favorable, and the designated courts may reach different judgments or results than other courts. Please also see "Risk Factors—Risks Related to This Offering and Ownership of Our Common Stock—Our bylaws that will become effective upon the effectiveness of this registration statement designate

[Table of Contents](#)

certain courts as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.”

Section 203 of the Delaware General Corporation Law

Upon completion of this offering, we will be subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions:

- before the stockholder became interested, our board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances, but not the outstanding voting stock owned by the interested stockholder; or
- at or after the time the stockholder became interested, the business combination was approved by our board of directors and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, lease, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- subject to exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges, or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

Nasdaq Global Market Listing

We have applied to list our common stock on the Nasdaq Global Market under the trading symbol “VIGL.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock will be Computershare Trust Company, N.A. The transfer agent and registrar's address is 250 Royall Street, Canton, Massachusetts 02021, and its telephone number is (800) 962-4284.

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our shares. Future sales of our common stock in the public market, or the availability of such shares for sale in the public market, could adversely affect market prices prevailing from time to time. As described below, only a limited number of shares will be available for sale shortly after this offering due to contractual and legal restrictions on resale. Nevertheless, sales of our common stock in the public market after such restrictions lapse, or the perception that those sales may occur, could adversely affect the prevailing market price at such time and our ability to raise equity capital in the future.

Based on the number of shares outstanding as of September 30, 2021, upon the completion of this offering, 28,263,963 shares of our common stock will be outstanding, assuming no exercise of the underwriters' option to purchase additional shares and no exercise of outstanding options. Of the outstanding shares, all of the shares sold in this offering will be freely tradable, except that any shares held by our affiliates, as that term is defined in Rule 144 under the Securities Act, may only be sold in compliance with the limitations described below.

Rule 144

In general, a person who has beneficially owned restricted stock for at least six months would be entitled to sell their securities provided that (i) such person is not deemed to have been one of our affiliates at the time of, or at any time during the 90 days preceding, a sale and (ii) we are subject to the Securities Exchange Act of 1934, as amended, or the Exchange Act, periodic reporting requirements for at least 90 days before the sale. Persons who have beneficially owned restricted shares for at least six months but who are our affiliates at the time of, or any time during the 90 days preceding, a sale, would be subject to additional restrictions, by which such person would be entitled to sell within any three-month period only a number of securities that does not exceed the greater of either of the following:

- 1% of the number of shares then outstanding, which will equal 282,639 shares immediately after this offering assuming no exercise of the underwriters' option to purchase additional shares, based on the number of shares outstanding as of September 30, 2021; or
- the average weekly trading volume of our common stock on the Nasdaq Global Market during the four calendar weeks preceding the filing of a notice on Form 144 with respect to the sale;

provided, in each case, that we are subject to the Exchange Act periodic reporting requirements for at least 90 days before the sale. Such sales both by affiliates and by non-affiliates must also comply with the manner of sale, current public information and notice provisions of Rule 144.

Rule 701

Rule 701 under the Securities Act, as in effect on the date of this prospectus, permits resales of shares in reliance upon Rule 144 but without compliance with certain restrictions of Rule 144, including the holding period requirement. Most of our employees, executive officers, or directors who purchased shares under a written compensatory plan or contract may be entitled to rely on the resale provisions of Rule 701, but all holders of Rule 701 shares are required to wait until 90 days after the date of this prospectus before selling their shares. However, substantially all Rule 701 shares are subject to lock-up agreements as described below and under "Underwriting" included elsewhere in this prospectus and will become eligible for sale upon the expiration of the restrictions set forth in those agreements.

Lock-up Agreements

We, all of our directors and executive officers, and the holders of substantially all of our capital stock and securities convertible into or exchangeable for our capital stock have entered into lock-up agreements with the underwriters and/or are subject to market standoff agreements or other agreements with us, which prevents them

[Table of Contents](#)

from selling any of our common stock or any securities convertible into or exercisable or exchangeable for common stock for a period of not less than 180 days from the date of this prospectus without the prior written consent of the representatives, subject to certain exceptions. See “Underwriting” appearing elsewhere in this prospectus for more information.

Registration Rights

Upon completion of this offering, certain holders of our securities will be entitled to various rights with respect to registration of their shares under the Securities Act. Registration of these shares under the Securities Act would result in these shares becoming fully tradable without restriction under the Securities Act immediately upon the effectiveness of the registration. See “Description of Capital Stock—Registration Rights” appearing elsewhere in this prospectus for more information.

Equity Incentive Plans

We intend to file one or more registration statements on Form S-8 under the Securities Act to register our shares issued or reserved for issuance under our equity incentive plans. The first such registration statement is expected to be filed soon after the date of this prospectus and will automatically become effective upon filing with the SEC. Accordingly, shares registered under such registration statement will be available for sale in the open market, unless such shares are subject to vesting restrictions with us or the lock-up restrictions described above.

CERTAIN MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS OF COMMON STOCK

The following discussion is a summary of certain material U.S. federal income tax considerations applicable to non-U.S. holders (as defined below) with respect to their ownership and disposition of shares of our common stock issued pursuant to this offering. For purposes of this discussion, a non-U.S. holder means a beneficial owner of our common stock that is for U.S. federal income tax purposes:

- a non-resident alien individual;
- a foreign corporation or other foreign organization taxable as a corporation;
- an estate the income of which is not subject to U.S. federal income tax on a net income basis; or
- a trust the income of which is not subject to U.S. federal income tax on a net income basis and that (1) is not subject to the primary supervision of a court within the United States or over which no U.S. persons have authority to control all substantial decisions and (2) has not made an election to be treated as a U.S. person.

This discussion does not address the tax treatment of partnerships or other entities that are pass-through entities for U.S. federal income tax purposes or persons that hold their common stock through partnerships or other pass-through entities. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its tax advisor regarding the tax consequences of acquiring, holding and disposing of our common stock through a partnership or other pass-through entity, as applicable.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing and proposed U.S. Treasury Regulations promulgated thereunder, current administrative rulings and judicial decisions, all as in effect as of the date of this prospectus and, all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any such change or differing interpretation could alter the tax consequences to non-U.S. holders described in this prospectus. We have not sought any ruling from the Internal Revenue Service, or the IRS, with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will not challenge one or more of the tax consequences described herein. We assume in this discussion that a non-U.S. holder holds shares of our common stock as a capital asset within the meaning of Section 1221 of the Code, generally property held for investment.

This discussion does not address all aspects of U.S. federal income taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances nor does it address any aspects of U.S. state, local or non-U.S. taxes, the alternative minimum tax, the Medicare tax on net investment income, the rules regarding qualified small business stock within the meaning of Section 1202 of the Code or any U.S. federal tax other than the income tax (including, for example, the estate tax). This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- insurance companies;
- tax-exempt or governmental organizations;
- financial institutions;
- brokers or dealers in securities;
- regulated investment companies and real estate investment trusts;
- pension plans;
- "controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;

[Table of Contents](#)

- “qualified foreign pension funds,” or entities wholly owned by a “qualified foreign pension fund”;
- partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes;
- persons deemed to sell our common stock under the constructive sale provisions of the Code;
- persons who have elected to mark securities to market;
- persons subject to special tax accounting rules as a result of any item of gross income with respect to the common stock being taken into account in an applicable financial statement under Section 451(b) of the Code;
- persons that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment;
- persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation;
- investors in pass-through entities (or entities that are treated as disregarded entities for U.S. federal income tax purposes); and
- U.S. expatriates.

This discussion is for general information only and is not tax advice. Accordingly, all prospective non-U.S. holders of our common stock should consult their own tax advisors with respect to the U.S. federal, state, local and non-U.S. tax consequences of the purchase, ownership and disposition of our common stock.

Distributions on Our Common Stock

Distributions, if any, on our common stock generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder’s investment, up to such holder’s tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below in “Gain on Sale or Other Taxable Disposition of Our Common Stock.” Any such distributions will also be subject to the discussions below under the sections entitled “Backup Withholding and Information Reporting” and “Withholding and Information Reporting Requirements—FATCA.”

Subject to the discussion in the following two paragraphs in this section, dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder’s country of residence. If we are unable to determine, at a time reasonably close to the date of payment of a distribution on our common stock, what portion, if any, of the distribution will constitute a dividend, then we may withhold U.S. federal income tax on the basis of assuming that the full amount of the distribution will be a dividend. If we or another withholding agent apply over-withholding, a non-U.S. holder may be entitled to a refund or credit of any excess tax withheld by timely filing an appropriate claim with the IRS.

Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally taxed at the same graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code). However, such effectively connected dividends will be exempt from the 30% withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements. To obtain this exemption, a non-U.S. holder must generally provide the applicable withholding agent with a properly executed IRS Form W-8ECI (or other applicable or successor form) properly certifying eligibility for exemption. Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, be subject to an additional “branch profits tax” at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder’s country of residence.

A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BEN-E (or other applicable or successor form) to the applicable withholding agent and satisfy applicable certification and other requirements. Non-U.S. holders are urged to consult their tax advisors regarding their entitlement to benefits under a relevant income tax treaty. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS. Any documentation provided to an applicable withholding agent may need to be updated in certain circumstances. The certification requirements described above also may require a non-U.S. holder to provide its U.S. taxpayer identification number.

Gain on Sale or Other Taxable Disposition of Our Common Stock

Subject to the discussions below under "Backup Withholding and Information Reporting" and "Withholding and Information Reporting Requirements—FATCA," a non-U.S. holder generally will not be subject to any U.S. federal income tax on any gain realized upon such holder's sale or other taxable disposition of shares of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a U.S. trade or business and, if an applicable income tax treaty so provides, is attributable to a permanent establishment or a fixed-base maintained by such non-U.S. holder in the United States, in which case the non-U.S. holder generally will be taxed on a net income basis at the graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in "Distributions on Our Common Stock" also may apply;
- the non-U.S. holder is a nonresident alien individual who is present in the United States for a period aggregating 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) on the net gain derived from the disposition, which may be offset by certain U.S. source capital losses of the non-U.S. holder, if any (even though the individual is not considered a resident of the United States), provided that the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses; or
- we are, or have been, at any time during the five-year period preceding such sale or other taxable disposition (or the non-U.S. holder's holding period, if shorter) a "U.S. real property holding corporation," unless our common stock is regularly traded on an established securities market, within the meaning of the relevant provisions of the Code, and the non-U.S. holder holds no more than 5% of our outstanding common stock, directly or indirectly, actually or constructively, during the shorter of the 5-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. If we are determined to be a U.S. real property holding corporation and the foregoing exception does not apply, then the non-U.S. holder generally will be taxed on its net gain derived from the disposition at the graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code), except that the branch profits tax generally will not apply. If we are a U.S. real property holding corporation and our common stock is not regularly traded on an established securities market, a non-U.S. holder's proceeds received on the disposition of shares will also generally be subject to withholding at a rate of 15%. Generally, a corporation is a U.S. real property holding corporation only if the fair market value of its U.S. real property interests (as defined in the Code) equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance, we do not believe that we are, or have been, a U.S. real property holding corporation, or that we are likely to become one in the future. No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rules described above.

Backup Withholding and Information Reporting

We (or the applicable paying agent) must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders may have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock. Dividends paid to non-U.S. holders subject to withholding of U.S. federal income tax, as described above in “Distributions on Our Common Stock,” generally will be exempt from U.S. backup withholding.

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or foreign, unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them. Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement. Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder can be refunded or credited against the non-U.S. holder’s U.S. federal income tax liability, if any, provided that an appropriate claim is filed with the IRS in a timely manner.

Withholding and Information Reporting Requirements—FATCA

The Foreign Account Tax Compliance Act (FATCA) generally imposes a U.S. federal withholding tax at a rate of 30% on certain types of payments made to a foreign entity unless (i) if the foreign entity is a “foreign financial institution,” such foreign entity undertakes certain due diligence, reporting, withholding, and certification obligations, (ii) if the foreign entity is not a “foreign financial institution,” such foreign entity identifies certain of its U.S. investors, if any, or (iii) the foreign entity is otherwise exempt under FATCA. Under applicable U.S. Treasury regulations, withholding under FATCA currently applies to payments of dividends on our common stock. Such withholding may also apply to gross proceeds from the sale or disposition of our common stock, although under proposed U.S. Treasury Regulations, no withholding would apply to such gross proceeds. The preamble to the proposed regulations specifies that taxpayers (including withholding agents) are permitted to rely on the proposed regulations pending finalization. Under certain circumstances, a non-U.S. holder may be eligible for refunds or credits of this withholding tax. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this paragraph. Non-U.S. holders should consult their tax advisors regarding the possible implications of this legislation on their investment in our common stock and the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of the 30% withholding tax under FATCA.

The preceding discussion of U.S. federal income tax considerations is for general information only. It is not tax advice. Each prospective investor should consult its tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed change in applicable laws.

UNDERWRITING

Under the terms and subject to the conditions in an underwriting agreement dated the date of this prospectus, the underwriters named below, for whom Morgan Stanley & Co. LLC and Jefferies LLC are acting as representatives, have severally agreed to purchase, and we have agreed to sell to them, severally, the number of shares indicated below:

<u>Name</u>	<u>Number of Shares</u>
Morgan Stanley & Co. LLC	
Jefferies LLC	
Stifel, Nicolaus & Company, Incorporated	
Guggenheim Securities, LLC	
Total:	7,000,000

The underwriters and the representatives are collectively referred to as the “underwriters” and the “representatives,” respectively. The underwriters are offering the shares of common stock subject to their acceptance of the shares from us and subject to prior sale. The underwriting agreement provides that the obligations of the several underwriters to pay for and accept delivery of the shares of common stock offered by this prospectus are subject to the approval of certain legal matters by their counsel and to certain other conditions. The underwriters are obligated to take and pay for all of the shares of common stock offered by this prospectus if any such shares are taken. However, the underwriters are not required to take or pay for the shares covered by the underwriters’ over-allotment option described below.

The underwriters initially propose to offer part of the shares of common stock directly to the public at the offering price listed on the cover page of this prospectus and part to certain dealers at a price that represents a concession not in excess of \$ _____ per share under the public offering price. After the initial offering of the shares of common stock, the offering price and other selling terms may from time to time be varied by the representatives.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to 1,050,000 additional shares of common stock at the public offering price listed on the cover page of this prospectus, less underwriting discounts and commissions. The underwriters may exercise this option solely for the purpose of covering over-allotments, if any, made in connection with the offering of the shares of common stock offered by this prospectus. To the extent the option is exercised, each underwriter will become obligated, subject to certain conditions, to purchase about the same percentage of the additional shares of common stock as the number listed next to the underwriter’s name in the preceding table bears to the total number of shares of common stock listed next to the names of all underwriters in the preceding table.

The following table shows the per share and total public offering price, underwriting discounts and commissions, and proceeds before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters’ option to purchase up to an additional 1,050,000 shares of common stock.

	<u>Per Share</u>	<u>Total</u>	
		<u>No Exercise</u>	<u>Full Exercise</u>
Public offering price	\$	\$	\$
Underwriting discounts and commissions	\$	\$	\$
Proceeds, before expenses, to us	\$	\$	\$

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately \$3.1 million. We have agreed to reimburse the underwriters for expense relating to clearance of this offering with the Financial Industry Regulatory Authority up to \$35,000 and expenses incurred in connection with the directed share program.

[Table of Contents](#)

The underwriters have informed us that they do not intend sales to discretionary accounts to exceed 5% of the total number of shares of common stock offered by them.

We have applied to have our common stock listed on the NASDAQ Global Market under the trading symbol “VIGL”.

We and all directors and officers, and substantially all of the holders of all of our outstanding stock and stock options, have agreed that, without the prior written consent of the representatives on behalf of the underwriters, we and they will not, and will not publicly disclose an intention to, during the period ending 180 days after the date of this prospectus (the “restricted period”):

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exercisable or exchangeable for shares of common stock;
- file any registration statement with the SEC relating to the offering of any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock; or
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock.

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise. In addition, we and each such person agrees that, without the prior written consent of the representatives on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any security convertible into or exercisable or exchangeable for common stock.

The restrictions described in the immediately preceding paragraph do not apply to:

- (a) the sale of shares to the underwriters; or
- (b) the issuance by the Company of shares of common stock upon the exercise of an option or a warrant or the conversion of a security outstanding on the date of this prospectus of which the underwriters have been advised in writing; or
- (c) transactions by any person other than us (including any swap, hedge, derivative or other synthetic arrangement) or public announcements, in each case relating to shares of common stock or other securities acquired (i) in this initial public offering or (ii) in open market or other transactions after the completion of the offering of the shares or that otherwise do not involve or relate to shares of common stock or other securities owned by the party subject to the lock-up prior to the public offering; provided that no filing by the party subject to the lock-up under Section 16(a) of the Exchange Act, or any other public announcement reporting a reduction in beneficial ownership of common stock below the number of shares of common stock or other securities that the undersigned owns immediately prior to the public offering, is required or voluntarily made during the restricted period in connection with subsequent sales of the common stock or other securities acquired in the public offering or such open market or other transactions (other than filings required to be made pursuant to Section 13 of the Exchange Act so long as such filings do not report a reduction in beneficial ownership of common stock below the number of shares of common stock or other securities that the undersigned owns immediately prior to the public offering);
- (d) transfers of shares of common stock or any security convertible into or exercisable or exchangeable for common stock (i) as a bona fide gift or to a charitable organization or educational institution in a transfer not involving a disposition for value or (ii) if the party subject to the lock-up restrictions is a corporation, partnership or other business entity, as part of a disposition, transfer or distribution without consideration to limited partners, members, affiliates, equity holders or stockholders of such entity, or to the estates of any of the foregoing;

Table of Contents

- (e) transfers or dispositions of common stock or any security convertible into or exercisable or exchangeable for common stock to any immediate family member of the party subject to the lock-up restrictions or any trust for the direct or indirect benefit of such person or an immediate family member of such person, or if the party subject to the lock-up restrictions is a trust, to a grantor, trustee or beneficiary of the trust (including such beneficiary's estate) of the party subject to the lock-up restrictions, in each case set forth in this clause (e) in a transaction not involving a disposition for value;
- (f) transfers or dispositions of common stock or any security convertible into or exercisable or exchangeable for common stock (i) by will, other testamentary document or intestate succession to the legal representative, heir, beneficiary or a member of the immediate family of the party subject to the lock-up restrictions upon the death of such person or (ii) by operation of law pursuant to orders of a court or regulatory agency, in connection with a negotiated divorce settlement or pursuant to a qualified domestic relations order;
- (g) if the party subject to the lock-up restrictions is an entity, transfers, dispositions or distributions of shares of common stock or any security convertible into common stock (i) to another corporation, partnership, limited liability company, trust or other business entity that is an affiliate (within the meaning set forth in Rule 405 under the Securities Act of 1933, as amended, and including the subsidiaries of such entity) of the party subject to the lock-up restrictions, (ii) to any investment fund or other entity controlling, controlled by, managing or managed by or under common control with the party subject to the lock-up restrictions or affiliates thereof (including, for the avoidance of doubt, where the party subject to the lock-up restrictions is a partnership, to its general partner or successor partnership or fund, or any other funds managed by such partnership) or (iii) to its stockholders, limited partners, general partners, members, beneficiaries or other equityholders or to the estate of any such stockholders, limited partners, general partners, members, beneficiaries or equityholders;
- (h) transfers or dispositions of common stock or any security convertible into or exercisable or exchangeable for common stock to the Company (i) pursuant to any contractual arrangement in effect on the date of the lock-up agreement and described in this prospectus or (ii) in connection with the termination of the employment with or service to the Company of the party subject to the lock-up restrictions; provided that such transfers or dispositions are not required to be reported with the SEC on Form 4 in accordance with Section 16 under the Exchange Act and no other public announcement shall be voluntarily made during the restricted period in connection with any such transfers or dispositions (other than (1) Schedule 13 filings filed with the SEC, and (2) any Form 4 or Form 5 required to be filed under the Exchange Act if the party subject to the lock-up restrictions is subject to Section 16 reporting with respect to the Company under the Exchange Act and indicating by footnote disclosure or otherwise the nature of the transfer or disposition);
- (i) transfers or dispositions of common stock or other securities to the Company in connection with the conversion of any convertible security into, or the exercise of any option or warrant for, common stock (including by way of "net" or "cashless" exercise or settlement solely to cover withholding tax obligations, including estimated taxes, in connection with such exercise and any transfer to the Company for the payment of taxes as a result of such exercise) in each case pursuant to any equity incentive plan, other equity award plan or warrant of the Company described in this prospectus and to the extent permitted by the instruments representing such options outstanding as of the date of this prospectus; provided that (i) any such common stock received by the party subject to the lock-up restrictions shall be subject to the terms of this agreement and (ii) no filing under Section 16 of the Exchange Act, reporting a reduction in beneficial ownership of common stock, or other public announcement shall be required or shall be voluntarily made during the restricted period (other than a filing on a Form 4 that reports such disposition under the transaction code "F" and indicates by footnote disclosure or otherwise the nature of the transfer or disposition);
- (j) (i) transfers of common stock (or any securities convertible into or exercisable or exchangeable for common stock) pursuant to a bona fide third-party tender offer, merger, consolidation or other similar

[Table of Contents](#)

transaction approved by the Company's board of directors the result of which is that any person (as defined in Section 13(d)(3) of the Exchange Act), or group of persons, other than the Company, becomes the beneficial owner (as defined in Rules 13d-3 and 13d-5 of the Exchange Act) of more than 50% of the total voting power of the voting stock of the Company and (ii) entry into any lock-up, voting or similar agreement pursuant to which the party subject to the lock-up restrictions may agree to transfer, sell, tender or otherwise dispose of common stock or such other securities in connection with a transaction described in (i) above; provided that in the event that such change of control transaction is not completed, the common stock (or any security convertible into or exercisable or exchangeable for common stock) owned by the party subject to the lock-up restrictions shall remain subject to the restrictions contained in this agreement;

- (k) facilitating the establishment of a trading plan on behalf of a shareholder, officer or director of the Company pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock, *provided* that (i) such plan does not provide for the transfer of common stock during the restricted period and (ii) to the extent a public announcement or filing under the Exchange Act, if any, is required of or voluntarily made by or on behalf of the party subject to the lock-up restrictions or the Company regarding the establishment of such plan, such announcement or filing shall include a statement to the effect that no transfer of common stock may be made under such plan during the restricted period;
- (l) pursuant to an order of a court or regulatory agency or to comply with any regulations related to the ownership by the party subject to the lock-up restrictions of shares of common stock or any security convertible into or exercisable or exchangeable for common stock, provided that in the case of any transfer pursuant to this subsection (l), any filing under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of common stock shall state that such transfer is pursuant to an order of a court or regulatory agency or to comply with any regulations related to the ownership of common stock unless such a statement would be prohibited by any applicable law, regulation or order of a court or regulatory authority; or
- (m) the conversion of the outstanding shares of preferred stock or warrants to acquire shares of preferred stock of the Company described in this prospectus into shares of common stock of the Company; provided that such shares of common stock remain subject to the terms of this agreement;

provided that in the case of any transfer or distribution pursuant to clause (d), (e), (f) and (g), (i) each transferee, donee or distributee shall sign and deliver a lock up agreement substantially in the form of this agreement and (ii) no filing under Section 16(a) of the Exchange Act, reporting a reduction in beneficial ownership of shares of common stock, or any other public announcement, shall be required or shall be voluntarily made during the restricted period (other than, (1) Schedule 13 filings filed with the SEC, and (2) in the case of a transfer or other disposition pursuant to clause d(ii) or (f) above, any Form 4 or Form 5 required to be filed under the Exchange Act if the party subject to the lock-up restrictions is subject to Section 16 reporting with respect to the Company under the Exchange Act, and any such filing will indicate by footnote disclosure or otherwise the nature of the transfer or disposition).

The representatives, in their sole discretion, may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time.

In order to facilitate the offering of the common stock, the underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the common stock. Specifically, the underwriters may sell more shares than they are obligated to purchase under the underwriting agreement, creating a short position. A short sale is covered if the short position is no greater than the number of shares available for purchase by the underwriters under their over-allotment option. The underwriters can close out a covered short sale by exercising their over-allotment option or purchasing shares in the open market. In determining the source of shares to close out a covered short sale, the underwriters will consider, among other things, the open market price of shares compared to the price available under their over-allotment option. The underwriters may also sell shares in excess of their over-allotment option, creating a naked short position. The underwriters must close out any naked short

[Table of Contents](#)

position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in this offering. As an additional means of facilitating this offering, the underwriters may bid for, and purchase, shares of common stock in the open market to stabilize the price of the common stock. These activities may raise or maintain the market price of the common stock above independent market levels or prevent or retard a decline in the market price of the common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We and the underwriters have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act.

A prospectus in electronic format may be made available on websites maintained by one or more underwriters, or selling group members, if any, participating in this offering. The representatives may agree to allocate a number of shares of common stock to underwriters for sale to their online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters that may make Internet distributions on the same basis as other allocations.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various financial advisory and investment banking services for us or our affiliates, for which they received or will receive customary fees and expenses.

In addition, in the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve our securities and instruments. The underwriters and their respective affiliates may also make investment recommendations or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long or short positions in such securities and instruments.

Pricing of the Offering

Prior to this offering, there has been no public market for our common stock. The initial public offering price was determined by negotiations between us and the representatives. Among the factors considered in determining the initial public offering price were our future prospects and those of our industry in general, our sales, earnings and certain other financial and operating information in recent periods, and the price-earnings ratios, price-sales ratios, market prices of securities, and certain financial and operating information of companies engaged in activities similar to ours.

Directed Share Program

At our request, the underwriters have reserved 5% of the shares of common stock to be issued by the Company and offered by this prospectus for sale, at the initial public offering price, to directors, officers, employees, business associates and related persons of Vigil Neuroscience, Inc. If purchased by these persons, these shares will be subject to a 180-day lock-up restriction. The number of shares of common stock available for sale to the general public will be reduced to the extent these individuals purchase such reserved shares. Any reserved shares that are not so purchased will be offered by the underwriters to the general public on the same basis as the other shares offered by this prospectus. In addition, we have requested that the underwriters make issuer directed allocations in the aggregate of _____ shares of our common stock to certain investors.

Selling Restrictions

Australia

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission, or the ASIC, in relation to this offering. This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001, or the Corporations Act, and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act.

Any offer in Australia of the securities may only be made to persons, or Exempt Investors, who are “sophisticated investors” (within the meaning of section 708(8) of the Corporations Act), “professional investors” (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in Section 708 of the Corporations Act so that it is lawful to offer the securities without disclosure to investors under Chapter 6D of the Corporations Act.

The securities applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under Section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring the securities must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

Canada

The securities may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser’s province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser’s province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts, or NI 33-105, the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Dubai International Financial Centre

This prospectus relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority, or the DFSA. This prospectus is intended for distribution only to persons of a type

specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus nor taken steps to verify the information set forth herein and has no responsibility for the prospectus. The securities may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the securities offered should conduct their own due diligence on the securities. If you do not understand the contents of this prospectus you should consult an authorized financial advisor.

European Economic Area

In relation to each Member State of the European Economic Area (each, a “Relevant State”), no securities have been offered or will be offered pursuant to the offering to the public in that Relevant State prior to the publication of a prospectus in relation to the securities which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that offers of securities may be made to the public in that Relevant State at any time under the following exemptions under the Prospectus Regulation:

- (a) to any legal entity which is a qualified investor as defined under the Prospectus Regulation;
- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined under the Prospectus Regulation), subject to obtaining the prior consent of the representatives; or
- (c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of shares shall require us or any of our representatives to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

For the purposes of this provision, the expression an “offer to the public” in relation to any shares in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase any shares, and the expression “Prospectus Regulation” means Regulation (EU) 2017/1129 (as amended).

Hong Kong

The securities have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (a) to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance or (b) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the securities has been or may be issued or has been or may be in the possession of any person for the purposes of issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, the securities were not offered or sold or caused to be made the subject of an invitation for subscription or purchase and will not be offered or sold or caused to be made the subject of an invitation for subscription or purchase, and this prospectus or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the securities, has not been circulated or distributed, nor will it

[Table of Contents](#)

be circulated or distributed, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time, or the SFA) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the securities are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor;

securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the securities pursuant to an offer made under Section 275 of the SFA except:

- (a) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i) (B) of the SFA;
- (b) where no consideration is or will be given for the transfer;
- (c) where the transfer is by operation of law; or
- (d) as specified in Section 276(7) of the SFA.

Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or the SIX, or on any other stock exchange or regulated trading facility in Switzerland. This prospectus has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus nor any other offering or marketing material relating to the securities or this offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus nor any other offering or marketing material relating to us, this offering or the securities has been or will be filed with or approved by any Swiss regulatory authority. In particular, this prospectus will not be filed with, and this offering of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA (FINMA), and this offering of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or the CISA. The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of the securities.

United Arab Emirates

The securities have not been, and are not being, publicly offered, sold, promoted or advertised in the United Arab Emirates (including the Dubai International Financial Centre) other than in compliance with the laws of the United Arab Emirates (and the Dubai International Financial Centre) governing the issue, offering and sale of securities. Further, this prospectus does not constitute a public offer of securities in the United Arab Emirates (including the Dubai International Financial Centre) and is not intended to be a public offer. This prospectus has not been approved by or filed with the Central Bank of the United Arab Emirates, the Securities and Commodities Authority or the DFSA.

United Kingdom

In relation to the United Kingdom, no shares have been offered or will be offered pursuant to this offering to the public in the United Kingdom prior to the publication of a prospectus in relation to the shares that either (i) has been approved by the Financial Conduct Authority, or (ii) is to be treated as if it had been approved by the Financial Conduct Authority in accordance with the transitional provision in Regulation 74 of the Prospectus (Amendment etc.) (EU Exit) Regulations 2019, except that offers of shares may be made to the public in the United Kingdom at any time under the following exemptions under the UK Prospectus Regulation:

- (a) to any legal entity which is a qualified investor as defined under Article 2 of the UK Prospectus Regulation;
- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the UK Prospectus Regulation), subject to obtaining the prior consent of representatives for any such offer; or
- (c) in any other circumstances falling within Section 86 of the Financial Services and Markets Act 2000, or the FSMA, provided that no such offer of the shares shall require the Issuer or any representative to publish a prospectus pursuant to Section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation.

For the purposes of this provision, the expression an “offer to the public” in relation to the shares in the United Kingdom means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares and the expression “UK Prospectus Regulation” means Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018.

In addition, this prospectus is only being distributed to, and is only directed at, and any investment or investment activity to which this prospectus relates is available only to, and will be engaged in only with, persons who are outside the United Kingdom or persons in the United Kingdom (i) having professional experience in matters relating to investments who fall within the definition of “investment professionals” in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, or the Order; or (ii) who are high net worth entities falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as “relevant persons”). Persons who are not relevant persons should not take any action on the basis of this prospectus and should not act or rely on it.

LEGAL MATTERS

The validity of the shares of common stock offered by this prospectus will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. Certain legal matters related to this offering will be passed upon for the underwriters by Ropes & Gray LLP, Boston, Massachusetts.

EXPERTS

The financial statements as of December 31, 2020 and for the period from June 22, 2020 (inception) to December 31, 2020 included in this prospectus have been so included in reliance on the report (which contains an explanatory paragraph relating to the Company’s ability to continue as a going concern as described in Note 1 to the consolidated financial statements) of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 (File Number 333-261230) under the Securities Act with respect to the common stock we are offering by this prospectus. This prospectus does not contain all of the information included in the registration statement. For further information pertaining to us and our common stock, you should refer to the registration statement and to its exhibits. Whenever we make reference in this prospectus to any of our contracts, agreements or other documents, the references are not necessarily complete, and you should refer to the exhibits attached to the registration statement for copies of the actual contract, agreement or other document.

Upon the completion of the offering, we will be subject to the informational requirements of the Exchange Act and will file annual, quarterly and current reports, proxy statements and other information with the SEC. You can read our SEC filings, including the registration statement, at the SEC's website at www.sec.gov. We also maintain a website at www.vigilneuro.com. Upon completion of the offering, you may access, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendment to those reported filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC.

VIGIL NEUROSCIENCE INC.
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

	<u>Page</u>
Report of Independent Registered Public Accounting Firm	F-2
Financial Statements	
Consolidated Balance Sheets as of December 31, 2020 and September 30, 2021 (unaudited)	F-3
Consolidated Statements of Operations and Comprehensive Loss for the Period from June 22, 2020 (inception) to December 31, 2020, Period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and the Nine Months Ended September 30, 2021 (unaudited)	F-4
Consolidated Statements of Convertible Preferred Stock and Stockholders' Deficit for the Period from June 22, 2020 (inception) to December 31, 2020, Period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and the Nine Months Ended September 30, 2021 (unaudited)	F-5
Consolidated Statements of Cash Flows for the Period from June 22, 2020 (inception) to December 31, 2020, Period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and the Nine Months Ended September 30, 2021 (unaudited)	F-6
Notes to Consolidated Financial Statements	F-7

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Vigil Neuroscience, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of Vigil Neuroscience, Inc. and its subsidiary (the “Company”) as of December 31, 2020, and the related consolidated statements of operations and comprehensive loss, of convertible preferred stock and stockholders’ deficit, and of cash flows for the period from June 22, 2020 (Inception) to December 31, 2020, including the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020, and the results of its operations and its cash flows for the period from June 22, 2020 (Inception) to December 31, 2020 in conformity with accounting principles generally accepted in the United States of America.

Substantial Doubt about the Company’s Ability to Continue as a Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has incurred losses and negative cash flows from operations since inception, expects continuing operating losses for the foreseeable future and needs to raise additional capital to finance its future operations that raise substantial doubt about its ability to continue as a going concern. Management’s plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts

October 8, 2021, except for the effects of the reverse stock split discussed in Note 15 to the consolidated financial statements, as to which the date is January 3, 2022.

We have served as the Company’s auditor since 2021.

VIGIL NEUROSCIENCE, INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except share and per share amounts)

	<u>December 31, 2020</u>	<u>September 30, 2021 (Unaudited)</u>
Assets		
Current assets:		
Cash and cash equivalents	\$ 24,151	\$ 110,656
Prepaid expenses and other current assets(1)	1,145	1,250
Total current assets	25,296	111,906
Property and equipment, net	—	172
Operating lease right-of-use assets	—	387
Financing lease right-of-use assets	—	96
Other assets	—	1,854
Total assets	<u>\$ 25,296</u>	<u>\$ 114,415</u>
Liabilities, Convertible Preferred Stock and Stockholders' Deficit		
Current liabilities:		
Accounts payable(2)	\$ 1,107	\$ 5,104
Accrued expenses and other current liabilities(2)	888	4,137
Operating lease liabilities	—	318
Financing lease liabilities	—	42
Total current liabilities	1,995	9,601
Related party antidilution obligation	4,247	—
Operating lease liabilities, net of current portion	—	58
Finance lease liabilities, net of current portion	—	34
Series A preferred stock tranche obligation	303	—
Total liabilities	<u>6,545</u>	<u>9,693</u>
Commitments and contingencies (Note 14)		
Series A convertible preferred stock, net of issuance costs, \$0.0001 par value; 28,522,592 shares authorized as of December 31, 2020 and September 30, 2021 (unaudited); 18,707,126 and 28,522,592 shares issued and outstanding as of December 31, 2020 and September 30, 2021 (unaudited), respectively; liquidation preference of \$47,647 and \$72,647 as of December 31, 2020 and September 30, 2021 (unaudited), respectively	47,034	72,327
Series B convertible preferred stock, net of issuance costs, \$0.0001 par value; 0 and 25,657,096 shares authorized as of December 31, 2020 and September 30, 2021 (unaudited), respectively; 0 and 25,657,096 shares issued and outstanding as of December 31, 2020 and September 30, 2021 (unaudited), respectively; liquidation preference of \$0 and \$90,000 as of December 31, 2020 and September 30, 2021 (unaudited), respectively	—	89,653
Stockholders' deficit:		
Common stock, \$0.0001 par value; 40,000,000 shares authorized at December 31, 2020 and September 30, 2021 (unaudited); 1,748,879 shares issued as of December 31, 2020 and September 30, 2021 (unaudited), respectively; and 1,748,879 and 1,727,093 shares outstanding as of December 31, 2020 and September 30, 2021 (unaudited), respectively	—	—
Additional paid-in capital	263	1,586
Accumulated deficit	(28,546)	(58,844)
Total stockholders' deficit	<u>(28,283)</u>	<u>(57,258)</u>
Total liabilities, convertible preferred stock and stockholders' deficit	<u>\$ 25,296</u>	<u>\$ 114,415</u>

(1) Includes related party amounts of \$354 and \$0 at December 31, 2020 and September 30, 2021, respectively (see Note 13).

(2) Includes related party amounts of \$424 (accounts payable) at December 31, 2020; \$1,694 (accounts payable) and \$351 (accrued expenses and other current liabilities) at September 30, 2021 (see Note 13).

The accompanying notes are an integral part of these consolidated financial statements.

VIGIL NEUROSCIENCE, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(In thousands, except share and per share amounts)

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (Unaudited)	Nine Months Ended September 30, 2021 (Unaudited)
Operating expenses:			
Related party acquired in-process research and development	\$ 20,923	\$ 20,923	\$ —
Research and development ⁽³⁾	4,514	1,337	23,211
General and administrative	1,777	895	6,221
Total operating expenses	<u>27,214</u>	<u>23,155</u>	<u>29,432</u>
Loss from operations	<u>(27,214)</u>	<u>(23,155)</u>	<u>(29,432)</u>
Other income (expense):			
Change in fair value of the related party antidilution obligation	(1,307)	(1,152)	(836)
Change in fair value of Series A preferred stock tranche obligation	(24)	(3)	(28)
Interest income	—	—	3
Other expense, net	(1)	—	(5)
Total other expense, net	<u>(1,332)</u>	<u>(1,155)</u>	<u>(866)</u>
Net loss and comprehensive loss	<u>\$ (28,546)</u>	<u>\$ (24,310)</u>	<u>\$ (30,298)</u>
Net loss per share attributable to common stockholders, basic and diluted	<u>\$ (21.15)</u>	<u>\$ (19.76)</u>	<u>\$ (19.94)</u>
Weighted—average common shares outstanding, basic and diluted	<u>1,349,702</u>	<u>1,230,385</u>	<u>1,519,686</u>

(3) Includes related party amounts of \$811 for the period from June 22, 2020 (inception) to December 31, 2020, \$390 for the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and \$2,602 for the nine months ended September 30, 2021 (see Note 13).

The accompanying notes are an integral part of these consolidated financial statements.

VIGIL NEUROSCIENCE, INC.
CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT
(In thousands, except share amounts)

	Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Deficit
	Shares	Amount	Shares	Amount			
Balances at June 22, 2020 (Inception)	—	\$ —	—	\$ —	\$ —	\$ —	\$ —
Issuance of common stock	—	—	1,442,376	—	1	—	1
Issuance of Series A convertible preferred stock in exchange for license and partial settlement of the related party antidilution obligation	6,928,566	17,483	—	—	—	—	—
Issuance of Series A convertible preferred stock, net of Series A preferred stock tranche obligation of \$233 and issuance costs of \$170	9,815,467	24,597	—	—	—	—	—
Conversion of SAFE to preferred stock, net of Series A preferred stock tranche obligation of \$46	1,963,093	4,954	—	—	—	—	—
Grant of restricted stock	—	—	306,503	—	—	—	—
Stock-based compensation expense	—	—	—	—	77	—	77
Net loss	—	—	—	—	—	(24,310)	(24,310)
Balances at September 30, 2020 (Unaudited)	18,707,126	\$ 47,034	1,748,879	—	78	(24,310)	(24,232)
Stock-based compensation expense	—	—	—	—	185	—	185
Net loss	—	—	—	—	—	(4,236)	(4,236)
Balances at December 31, 2020	18,707,126	\$ 47,034	1,748,879	\$ —	\$ 263	\$ (28,546)	\$ (28,283)
Issuance of Series A convertible preferred stock, net of issuance costs of \$121	7,852,373	19,879	—	—	—	—	—
Reclassification of Series A preferred stock tranche obligation upon settlement	—	331	—	—	—	—	—
Reclassification of the related party antidilution obligation upon settlement	1,963,093	5,083	—	—	—	—	—
Issuance of Series B convertible preferred stock, net of issuance costs of \$347	25,657,096	89,653	—	—	—	—	—
Forfeiture of restricted stock	—	—	(21,786)	—	—	—	—
Stock-based compensation expense	—	—	—	—	1,323	—	1,323
Net loss	—	—	—	—	—	(30,298)	(30,298)
Balances at September 30, 2021 (Unaudited)	54,179,688	\$161,980	1,727,093	\$ —	\$ 1,586	\$ (58,844)	\$ (57,258)

The accompanying notes are an integral part of these consolidated financial statements.

VIGIL NEUROSCIENCE, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (Unaudited)	Nine Months Ended September 30, 2021 (Unaudited)
Cash flows from operating activities:			
Net loss	\$ (28,546)	\$ (24,310)	\$ (30,298)
Adjustments to reconcile net loss to net cash used by operating activities:			
Acquired in-process research and development	20,923	20,923	—
Stock-based compensation expense	262	77	1,323
Non-cash operating lease expense	—	—	147
Change in fair value of the related party antidilution obligation	1,307	1,152	836
Change in fair value of Series A preferred stock tranche obligation	24	3	28
Depreciation and amortization	—	—	13
Changes in operating assets and liabilities:			
Prepaid expenses and other current assets	(1,145)	(159)	(105)
Accounts payable	1,107	485	3,951
Accrued expenses and other current liabilities	888	547	2,280
Operating lease liabilities	—	—	(159)
Other assets	—	—	(16)
Net cash used in operating activities	<u>(5,180)</u>	<u>(1,282)</u>	<u>(22,000)</u>
Cash flows from investing activities:			
Purchases of property and equipment	—	—	(177)
Payment made for Amgen license	(500)	(500)	—
Net cash used in investing activities	<u>(500)</u>	<u>(500)</u>	<u>(177)</u>
Cash flows from financing activities:			
Proceeds from issuance of Series A convertible preferred stock, net of issuance costs paid	24,830	24,903	19,879
Proceeds from issuance of Series B convertible preferred stock, net of issuance costs paid	—	—	89,758
Payments of finance lease obligations	—	—	(28)
Net proceeds from SAFE	5,000	5,000	—
Net proceeds from issuance of common stock	1	1	—
Net cash provided by financing activities	<u>29,831</u>	<u>29,904</u>	<u>109,609</u>
Net increase in cash and cash equivalents	<u>24,151</u>	<u>28,122</u>	<u>87,432</u>
Cash, cash equivalents and restricted cash at beginning of period	—	—	<u>24,151</u>
Cash, cash equivalents and restricted cash at end of period	<u>\$ 24,151</u>	<u>\$ 28,122</u>	<u>\$ 111,583</u>
Supplemental disclosure of non-cash investing and financing activities:			
Issuance of Series A convertible preferred stock in exchange for license and partial settlement of the related party antidilution obligation	\$ 17,483	\$ 17,483	\$ —
Conversion of SAFE to Series A convertible preferred stock	\$ 4,954	\$ 4,954	\$ —
Recognition of the related party antidilution obligation	\$ 3,992	\$ 3,992	\$ —
Recognition of Series A preferred stock tranche obligation	\$ 279	\$ 279	\$ —
Settlement of related party antidilution obligation	\$ —	\$ —	\$ 5,083
Settlement of Series A preferred stock tranche obligation	\$ —	\$ —	\$ 331
Right-of-use assets obtained in exchange for operating lease liabilities	\$ —	\$ —	\$ 534
Right-of-use assets obtained in exchange for financing lease liabilities	\$ —	\$ —	\$ 104
Unpaid issuance costs included in accrued expenses	\$ —	\$ 73	\$ 105
Deferred offering costs included in accounts payable and accrued expenses	\$ —	\$ —	\$ 911

The accompanying notes are an integral part of these consolidated financial statements.

VIGIL NEUROSCIENCE, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Nature of the Business and Basis of Presentation

Vigil Neuroscience, Inc., together with its consolidated subsidiary, Vigil Neuroscience Securities Corporation (“Vigil” or the “Company”), is a microglia-focused company dedicated to improving the lives of patients, caregivers and families affected by rare and common neurodegenerative diseases by pursuing the development of disease-modifying therapeutics to restore the vigilance of microglia, the sentinel immune cells of the brain. The Company’s initial focus is on developing a pipeline of therapeutic candidates that it believes will activate and restore microglia function, with an initial focus in genetically defined subpopulations. The Company was incorporated in the State of Delaware in June 2020 and is located in Cambridge, Massachusetts.

The Company is subject to risks and uncertainties common to early-stage companies in the biopharmaceutical industry, including, but not limited to, completing preclinical studies and clinical trials, the ability to raise additional capital to fund operations, obtaining regulatory approval for therapeutic candidates, market acceptance of products, competition from substitute products, protection of proprietary intellectual property, compliance with government regulations, the impact of the COVID-19 coronavirus, dependence on key personnel, reliance on third-party organizations and the clinical and commercial success of its therapeutic candidates. Even if the Company’s development efforts are successful, it is uncertain when, if ever, the Company will realize significant revenue from product sales.

Going Concern

The Company has evaluated whether there are certain conditions and events, considered in the aggregate, that raise substantial doubt about the Company’s ability to continue as a going concern within one year after the date that the consolidated financial statements are issued.

As of September 30, 2021 (unaudited), the Company had cash and cash equivalents of \$110.7 million. The Company has incurred recurring losses since its inception, including net losses of \$28.5 million for the period from June 22, 2020 (inception) to December 31, 2020 and \$30.3 million for the nine months ended September 30, 2021 (unaudited). In addition, as of December 31, 2020 and September 30, 2021 (unaudited), the Company had an accumulated deficit of \$28.5 million and \$58.8 million, respectively. The Company expects to continue to generate significant operating losses for the foreseeable future. As of October 8, 2021, the issuance date of the consolidated financial statements for the period from June 22, 2020 (inception) to December 31, 2020 and as of November 19, 2021, the issuance date of the interim consolidated financial statements for the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and the nine months ended September 30, 2021 (unaudited), the Company expects that its existing cash and cash equivalents will be sufficient to fund its operating expenses and capital expenditure requirements into the fourth quarter of 2022. The future viability of the Company beyond that point is dependent on its ability to raise additional capital to finance its operations.

The Company is seeking to complete an initial public offering (“IPO”) of its common stock. Immediately prior to the closing of a qualifying public offering on specified terms, the Company’s outstanding convertible preferred stock will automatically convert into common stock (see Notes 7 and 8).

In the event the Company does not complete an IPO, the Company expects to seek additional funding through private equity financings, government or private-party grants, debt financings or other capital sources, including collaborations with other companies or other strategic transactions. The Company may not be able to obtain financing on acceptable terms, or at all, and the Company may not be able to enter into collaborations or other arrangements. The terms of any financing may adversely affect the holdings or rights of the Company’s stockholders.

[Table of Contents](#)

If the Company is unable to obtain sufficient capital, the Company will be forced to delay, reduce or eliminate some or all of its research and development programs, product portfolio expansion or future commercialization efforts, which could adversely affect its business prospects, or the Company may be unable to continue operations. Although management continues to pursue these plans, there is no assurance that the Company will be successful in obtaining sufficient funding on terms acceptable to the Company to fund continuing operations, if at all.

Based on its recurring losses from operations incurred since inception, expectation of continuing operating losses for the foreseeable future, and the need to raise additional capital to finance its future operations, as of October 8, 2021, the issuance date of the consolidated financial statements for the period from June 22, 2020 (inception) to December 31, 2020 and as of November 19, 2021, the issuance date of the interim consolidated financial statements for the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and the nine months ended September 30, 2021 (unaudited), the Company has concluded that there is substantial doubt about its ability to continue as a going concern for a period of one year from the date that these consolidated financial statements are issued.

The accompanying consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of this uncertainty. Accordingly, the consolidated financial statements have been prepared on a basis that assumes the Company will continue as a going concern and which contemplates the realization of assets and satisfaction of liabilities and commitments in the ordinary course of business.

Impact of the COVID-19 Coronavirus

In March 2020, the World Health Organization declared the outbreak of COVID-19 a global pandemic. The Company is subject to a number of risks associated with the COVID-19 global pandemic, including potential delays associated with the Company's ongoing preclinical studies and anticipated clinical trials. COVID-19 may have an adverse impact on the Company's operations, supply chains and distribution systems or those of our third-party vendors and collaborators, and increase expenses, including as a result of impacts associated with preventive and precautionary measures that are being taken, such as restrictions on travel and border crossings, quarantine policies and social distancing. The Company and its third-party vendors and collaborators may experience disruptions in supply of items that are essential for its research and development activities. In addition, the spread of COVID-19 has disrupted global healthcare and healthcare regulatory systems, which could divert healthcare resources away from, or materially delay, U.S. Food and Drug Administration approval and approval by other health authorities worldwide with respect to its therapeutic candidates. Furthermore, the Company's anticipated clinical trials may be negatively affected by the COVID-19 outbreak. Site initiation, patient enrollment and patient follow-up visits may be delayed, for example, due to prioritization of hospital resources toward the COVID-19 outbreak, travel restrictions, the inability to access sites for initiation and monitoring, and difficulties recruiting or retaining patients in the Company's planned clinical trials. Management cannot at this time predict the specific extent, duration, or full impact that the COVID-19 outbreak will have on the Company's financial condition, operations, and business plans for the remainder of 2021 and beyond. If the Company does not successfully commercialize any of its therapeutic candidates, it will be unable to generate product revenue or achieve profitability.

Basis of Presentation

The accompanying consolidated financial statements reflect the operations of the Company and its wholly-owned subsidiary. Intercompany balances and transactions have been eliminated in consolidation. The accompanying consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative GAAP as found in the Accounting Standards Codification ("ASC") and Accounting Standards Updates ("ASU") of the Financial Accounting Standards Board ("FASB").

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of expenses during the reporting periods. Significant estimates and assumptions reflected in these consolidated financial statements include, but are not limited to, research and development expenses and related prepaid or accrued costs and the valuation of common stock, Related Party Antidilution Obligation (as defined in Note 12) and Series A Preferred Stock Tranche Obligation (as defined within this Note 2). The Company bases its estimates on historical experience, known trends and other market-specific or relevant factors that it believes to be reasonable under the circumstances. On an ongoing basis, management evaluates its estimates as there are changes in circumstances, facts and experience. Changes in estimates are recorded in the period in which they become known. Actual results may differ from those estimates or assumptions.

Unaudited Interim Financial Information

The accompanying consolidated balance sheet as of September 30, 2021, the consolidated statements of operations and comprehensive loss, cash flows and of convertible preferred stock and stockholders' deficit for the period from June 22, 2020 (inception) to September 30, 2020 and for the nine months ended September 30, 2021 are unaudited. The September 30, 2021 unaudited consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements for the period from June 22, 2020 (inception) to December 31, 2020 and in the opinion of management, reflect all adjustments which include only normal recurring adjustments necessary for the fair statement of the Company's financial position as of September 30, 2021 and the results of its operations and its cash flows for the nine months ended September 30, 2021. The financial data and other information disclosed in these notes related to the nine months ended September 30, 2021 are also unaudited. The results of the nine months ended September 30, 2021, are not necessarily indicative of results to be expected for the year ending December 31, 2021, any other interim periods, or any future year or period.

Cash, Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments with a remaining maturity when purchased of three months or less to be cash equivalents. Cash equivalents are reported at fair value. At December 31, 2020 and September 30, 2021 (unaudited), the Company's cash equivalents are in money market funds. As of each balance sheet date and periodically throughout the year, the Company has maintained balances in various operating accounts in excess of federally insured limits.

In connection with the Company's lease agreement entered into in September 2021 (see Note 14), the Company is required to maintain a certificate of deposit ("CD") of \$0.9 million for the benefit of the landlord. As of September 30, 2021 (unaudited), this restricted cash amount was included in other assets in the consolidated balance sheet.

Cash, cash equivalents and restricted cash were comprised of the following:

	December 31, 2020	September 30, 2020 (Unaudited)	September 30, 2021 (Unaudited)
Cash and cash equivalents	\$ 24,151	\$ 28,122	\$ 110,656
Restricted cash, non-current	—	—	927
Total cash, cash equivalents and restricted cash	\$ 24,151	\$ 28,122	\$ 111,583

Deferred Offering Costs

The Company capitalizes certain legal, accounting and other third-party fees that are directly associated with in-process equity financings as deferred offering costs until such financings are consummated. After consummation of the equity financing, these costs are recorded as a reduction of the proceeds from the offering, either as a reduction of the carrying value of preferred stock or in stockholders' deficit as a reduction of additional paid-in capital generated as a result of the offering. Should the in-process equity financing be abandoned, the deferred offering costs would be expensed immediately as a charge to operating expenses in the consolidated statement of operations and comprehensive loss. The Company had no deferred offering costs recorded as of December 31, 2020. As of September 30, 2021 (unaudited), the Company had deferred offering costs totaling \$911 thousand in other assets in the condensed consolidated balance sheet.

Concentrations of Credit Risk and Off-Balance Sheet Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents. The Company maintains its cash and cash equivalents with high quality, accredited financial institutions and, accordingly, such funds are subject to minimal credit risk. The Company has no significant off-balance sheet concentrations of credit risk, such as foreign currency exchange contracts, option contracts or other hedging arrangements.

The Company is dependent on third-party organizations to manufacture and process its therapeutic candidates for its development programs. In particular, the Company relies on a single third-party contract manufacturer, Fujifilm Diosynth Biotechnologies U.S.A., Inc. ("FUJIFILM"), to produce clinical supply and process its current product candidate, VGL101 pursuant to the FUJIFILM agreement (see Note 12). The Company expects to continue to be dependent on a small number of manufacturers to supply it with its requirements for all products. The Company's research and development programs, including any associated potential commercialization efforts, could be adversely affected by a significant interruption in the supply of the necessary materials.

The Company is dependent on a limited number of third parties that provide license rights used by the Company in the development and potential commercialization of its therapeutic candidates and programs. Through December 31, 2020 and September 30, 2021 (unaudited), the Company's research and development programs primarily relate to rights conveyed by Amgen, Inc. ("Amgen") (see Note 12). The Company could experience delays in the development and potential commercialization of its therapeutic candidates and programs if the Amgen license arrangement or any other license agreement utilized in the Company's research and development activities is terminated, if the Company fails to meet the obligations required under its arrangements, or if the Company is unable to successfully secure new strategic alliances or licensing agreements.

Fair Value Measurements

Certain assets and liabilities of the Company are carried at fair value under GAAP. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

- Level 1 – Quoted prices in active markets for identical assets or liabilities.
- Level 2 – Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data.

[Table of Contents](#)

- Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to determining the fair value of the assets or liabilities, including pricing models, discounted cash flow methodologies and similar techniques.

The Company's cash equivalents, Related Party Antidilution Obligation and Series A Preferred Stock Tranche Obligation are carried at fair value, determined according to the fair value hierarchy described above (see Note 3). The carrying values of the Company's accounts payable and accrued expenses approximate their fair values, due to the short-term nature of these liabilities.

Research and Development Expenses

Research and development expenses are expensed as incurred. Research and development expenses consist of costs incurred in performing research and development activities, including amounts incurred under agreements with external vendors and consultants engaged to perform preclinical studies and to manufacture research and development materials for use in such studies, salaries and related personnel costs, stock-based compensation, consultant fees, and third-party license fees.

Upfront payments under license agreements are expensed upon receipt of the license, and annual maintenance fees under license agreements are expensed over the maintenance period. Milestone payments under license agreements are accrued, with a corresponding expense being recognized, in the period in which the milestone is determined to be probable of achievement and the related amount is reasonably estimable.

Nonrefundable advance payments for goods or services to be received in the future for use in research and development activities are recorded as prepaid expenses. The prepaid amounts are expensed as the related goods are delivered or the services are performed.

Patent Costs

Costs to secure, defend and maintain patents, including those incurred in connection with filing and prosecuting patent applications, are expensed as incurred due to the uncertainty about the recovery of the expenditure. Amounts incurred for patent-related expenditures are classified as general and administrative expenses in the consolidated statements of operations and comprehensive loss.

Accrued Research and Development Expenses

The Company has entered into various research, development and manufacturing contracts with third-party service providers, including contract research organizations and contract manufacturing organizations. These agreements are generally cancelable. The Company recognizes research and development expense associated with such arrangements as the costs are incurred and records accruals for estimated ongoing research, development and manufacturing costs, where necessary. When billing terms under these contracts do not coincide with the timing of when the work is performed, the Company is required to make estimates of outstanding obligations to those third parties as of period end. Any accrual estimates are based on a number of factors, including the Company's knowledge of the progress towards completion of the specific tasks to be performed, invoicing to date under the contracts, communication from the vendors of any actual costs incurred during the period that have not yet been invoiced and the costs included in the contracts. Significant judgments and estimates may be made in determining the accrued balances at the end of any reporting period. Actual results could differ from the estimates made by the Company. The historical accrual estimates made by the Company have not been materially different from the actual costs.

Acquired In-Process Research and Development Expenses

The Company measures and recognizes asset acquisitions or licenses to intellectual property that are not deemed to be business combinations based on the cost to acquire or license the asset or group of assets, which

[Table of Contents](#)

includes transaction costs. Goodwill is not recognized in asset acquisitions or transaction to license intellectual property. In an asset acquisition or license to intellectual property, the cost allocated to acquire in-process research and development (“IPR&D”) with no alternative future use is recognized as expense on the acquisition date.

Upfront and milestone payments made are accrued for and expensed when the achievement of the milestone is probable up to the point of regulatory approval. Milestone payments made upon regulatory approval are capitalized and amortized over the remaining useful life of the related product.

Acquired IPR&D expense recognized for the period from June 22, 2020 (inception) to December 31, 2020 and the period from June 22, 2020 (inception) to September 30, 2020 consisted of (i) \$20.4 million initial recognition of a Related Party Antidilution Obligation that obligates the Company to issue shares of the Series A convertible preferred stock equal to 25% of the Company’s capital stock until the Company has raised \$45.0 million in net cash proceeds from equity financings and (ii) the upfront cash consideration for the license arrangement of \$0.5 million (see Note 12). There were no acquired IPR&D expenses recognized for the nine months ended September 30, 2021.

Comprehensive Loss

Comprehensive loss includes net loss as well as other changes in stockholders’ deficit that result from transactions and economic events other than those with stockholders. There was no difference between net loss and comprehensive loss for each of the periods presented in the consolidated financial statements.

Stock-Based Compensation

The Company grants stock-based awards to employees, directors and non-employee consultants in the form of stock options to purchase shares of its common stock. The Company measures stock options with service-based vesting granted to employees, non-employees and directors based on the fair value of the award on the date of the grant using the Black-Scholes option-pricing model. The Company measures restricted common stock awards using the difference, if any, between the purchase price per share of the award and the fair value of the Company’s common stock at the date of the grant. Compensation expense for employee awards is recognized over the requisite service period, which is generally the vesting period of the award. Compensation expense for non-employee awards is recognized in the same manner as if the Company had paid cash in exchange for the goods or services, which is generally the vesting period of the award. The Company uses the straight-line method to record the expense of awards with service-based vesting conditions. For stock awards that have a performance condition, the Company recognizes compensation expense based on its assessment of the probability that the performance condition will be achieved, using an accelerated attribution model, over the explicit or implicit service period. The Company accounts for forfeitures as they occur.

The Company classifies stock-based compensation expense in its statements of operations and comprehensive loss in the same manner in which the award recipient’s salary and related costs are classified or in which the award recipient’s service payments are classified.

The Black-Scholes option-pricing model requires inputs based on certain subjective assumptions, which determine the fair value of stock-based awards, including the price, volatility of the underlying stock, the option’s expected term, the risk-free interest rate and expected dividends. The Company calculates the fair value of options granted by using the Black-Scholes option-pricing model with the following assumptions:

Expected Volatility – Due to the lack of a public market for the Company’s common stock and a lack of company-specific historical and implied volatility data, the Company has based its estimate of expected volatility on the historical volatility of a group of similar companies that are publicly traded. The historical volatility is calculated based on a period commensurate with the expected term assumption.

[Table of Contents](#)

Expected Term – The expected term of the Company’s options represents the period that the stock-based awards are expected to be outstanding. The Company uses the simplified method to calculate the expected term, as it does not have sufficient historical exercise data to develop reasonable expectations about future exercise patterns and post-vesting employment termination behavior.

Risk-Free Interest Rate – The risk-free interest rate is based on yield from the United States Treasury zero-coupon bonds whose term is consistent with the expected term of the stock options.

Dividend Yield – The expected dividend yield is assumed to be zero as the Company has never paid dividends and has no current plans to pay any dividends.

Classification and Accretion of Convertible Preferred Stock

The Company’s Series A convertible preferred stock and Series B convertible preferred stock (collectively, “Convertible Preferred Stock”) are classified outside of stockholders’ deficit in the consolidated balance sheets because the holders of such shares have liquidation rights in the event of a deemed liquidation that, in certain circumstances, is not solely within the control of the Company and would require the redemption of the then-outstanding Convertible Preferred Stock. The Company’s Convertible Preferred Stock are not redeemable, except in the event of a deemed liquidation (see Note 7). Because the occurrence of a deemed liquidation event is not currently probable, the carrying values of the Convertible Preferred Stock are not being accreted to their redemption values. Subsequent adjustments to the carrying values of the Convertible Preferred Stock would be made only when a deemed liquidation event becomes probable.

The Company recorded the Series A convertible preferred stock at fair value upon issuance, net of the Series A Preferred Stock Tranche Obligation (see to Note 7 for details of the Series A Preferred Stock Tranche Obligation) and associated issuance costs. The Company recorded the Series B convertible preferred stock at fair value upon issuance, net of associated issuance costs. The Company’s Convertible Preferred Stock is subject to a non-cumulative dividend when, as and if declared by the Company’s board of directors (the “Board”). Since the issuance of the Company’s outstanding Convertible Preferred Stock, no dividends have been declared on any shares of convertible preferred stock.

Segment Information

The Company manages its operations as a single segment for the purposes of assessing performance and allocating resources. The Company is focused on microglia biology to improve the lives of patients, caregivers, and families affected by rare and common neurodegenerative diseases through development of disease-modifying treatments that aim to restore the vigilance of microglia, the sentinel immune cells of the brain. The Company’s chief operating decision maker reviews the Company’s financial information on an aggregated basis for purposes of assessing performance and allocating resources. All assets are in the United States. The Company has not earned any revenue through September 30, 2021 (unaudited).

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. Depreciation is recognized using the straight-line method over the estimated useful life of each asset as follows:

	<u>Useful Life</u>
Computer software and equipment	3 years
Office equipment	5 years
Lab equipment	5 years
Leasehold improvements	Lesser of (i) useful life or (ii) lease term

[Table of Contents](#)

Costs for capital assets not yet placed into service are capitalized as construction-in-progress and depreciated once placed into service. Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation and amortization are removed from the accounts and any resulting gain or loss is included in loss from operations. Expenditures for repairs and maintenance that do not improve or extend the life of the respective assets are charged to expense in the period incurred.

Depreciation expense was \$5 thousand during the nine months ended September 30, 2021 (unaudited). The Company did not have property and equipment during the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and from June 22, 2020 (inception) to December 31, 2020.

Series A Preferred Stock Tranche Obligation

The Company's Series A Convertible Preferred Stock Purchase Agreement obligated the Series A investors to participate in a subsequent offering of Series A convertible preferred stock upon the achievement of specified development milestones by the Company.

The Company classified this Series A Preferred Stock Tranche Obligation as a liability in its consolidated balance sheets (the "Series A Preferred Stock Tranche Obligation") as the preferred stock tranche right was a freestanding financial instrument that would require the Company to transfer assets upon exercise of the right. The Series A Preferred Stock Tranche Obligation was initially recorded at fair value upon the issuance date of the preferred stock tranche right and was subsequently remeasured to fair value at each reporting date until settled (see Note 3). Changes in fair value of the Series A Preferred Stock Tranche Obligation were recognized within change in fair value of the Series A Preferred Stock Tranche Obligation in the consolidated statements of operations and comprehensive loss.

Impairment of Long-Lived Assets

Long-lived assets consist of property and equipment, operating lease and financing lease right-to-use assets. Long-lived assets to be held and used are tested for recoverability whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable. Factors that the Company considers in deciding when to perform an impairment review include significant underperformance of the business in relation to expectations, significant negative industry or economic trends, and significant changes or planned changes in the use of the assets. If an impairment review is performed to evaluate a long-lived asset group for recoverability, the Company compares forecasts of undiscounted cash flows expected to result from the use and eventual disposition of the long-lived asset group to its carrying value. An impairment loss would be recognized in loss from operations when estimated undiscounted future cash flows expected to result from the use of an asset group are less than its carrying amount. Impairment is measured based on the excess of the carrying value of the related assets over the fair value of such assets. The Company did not record any impairment losses on long-lived assets during the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) or the nine months ended September 30, 2021 (unaudited).

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the consolidated financial statements or in the Company's tax returns. Deferred tax assets and liabilities are determined on the basis of the differences between financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income, and to the extent it believes, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not

[Table of Contents](#)

be realized, a valuation allowance is established through a charge to income tax expense. Potential for recovery of deferred tax assets is evaluated by estimating the future profits expected and considering prudent and feasible tax planning strategies.

The Company accounts for uncertainty in income taxes recognized in the consolidated financial statements by applying a two-step process to determine the amount of tax benefit to be recognized. First, the tax position must be evaluated to determine the likelihood that it will be sustained upon external examination by the taxing authorities. If the tax position is deemed more likely than not to be sustained, the tax position is then assessed to determine the amount of benefit to recognize in the consolidated financial statements. The amount of the benefit that may be recognized is the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. The provision for income taxes includes the effects of any resulting tax reserves, or unrecognized tax benefits, that are considered appropriate as well as the related net interest and penalties. The Company's policy is to record estimated interest and penalties related to uncertain tax positions as a component of income tax expense. The Company had no amounts accrued for interest and penalties in its consolidated balance sheets as of December 31, 2020 and September 30, 2021 (unaudited).

Leases

In accordance with ASC 842, *Leases*, the Company determines if an arrangement is or contains a lease at inception. A contract is or contains a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The Company classifies leases at the lease commencement date as operating or finance leases and records a right-of-use asset and a lease liability on the consolidated balance sheet for all leases with an initial lease term of greater than 12 months. Leases with an initial term of 12 months or less are not recorded in the balance sheet, but payments are recognized as expense on a straight-line basis over the lease term. The Company has elected not to recognize leases with terms of 12 months or less.

A lease qualifies as a finance lease if any of the following criteria are met at the inception of the lease: (i) there is a transfer of ownership of the leased asset to the Company by the end of the lease term, (ii) the Company holds an option to purchase the leased asset that it is reasonably certain to exercise, (iii) the lease term is for a major part of the remaining economic life of the leased asset, (iv) the present value of the sum of lease payments equals or exceeds substantially all of the fair value of the leased asset, or (v) the nature of the leased asset is specialized to the point that it is expected to provide the lessor no alternative use at the end of the lease term. All other leases are recorded as operating leases.

The Company enters into contracts that contain both lease and non-lease components. Non-lease components may include maintenance, utilities, and other operating costs. The Company combines the lease and non-lease components of fixed costs in its lease arrangements as a single lease component. Variable costs, such as utilities or maintenance costs, are not included in the measurement of right-of-use assets and lease liabilities, but rather are expensed when the event determining the amount of variable consideration to be paid occurs.

Finance and operating lease assets and liabilities are recognized at the lease commencement date based on the present value of the lease payments over the lease term using the discount rate implicit in the lease. If the rate implicit is not readily determinable, the Company utilizes an estimate of its incremental borrowing rate based upon the available information at the lease commencement date. Operating lease assets are further adjusted for prepaid or accrued lease payments. Operating lease payments are expensed using the straight-line method as an operating expense over the lease term. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Finance lease assets are amortized to depreciation expense using the straight-line method over the shorter of the useful life of the related asset or the lease term. Finance lease payments are bifurcated into (i) a portion that is recorded as imputed interest expense and (ii) a portion that reduces the finance liability associated with the lease.

Certain of the Company's leases include options to extend or terminate the lease. The amounts determined for the Company's right-of-use assets and lease liabilities generally do not assume that renewal options or early-termination provisions, if any, are exercised, unless it is reasonably certain that the Company will exercise such options.

Net Income (Loss) Per Share

The Company follows the two-class method when computing net income (loss) per common share as the Company has issued shares that meet the definition of participating securities. The two-class method determines net income (loss) per common share for each class of common and participating securities according to dividends declared or accumulated and participation rights in undistributed earnings. The two-class method requires income (loss) available to common stockholders for the period to be allocated between common and participating securities based upon their respective rights to receive dividends as if all income for the period had been distributed. The Company considers its (i) convertible preferred stock, (ii) restricted stock, and (iii) SAFE (as defined in Note 12) during the periods they were outstanding (See Note 7) to be participating securities as, in the event a dividend is paid on common stock, the holders of these securities would be entitled to receive dividends on a basis consistent with the common stockholders. The Company also considers the shares issued upon the early exercise of stock options that are subject to repurchase to be participating securities because holders of such shares have non-forfeitable dividend rights in the event a dividend is paid on common stock. There is no allocation required under the two-class method during periods of loss since the participating securities do not have a contractual obligation to share in the losses of the Company.

Basic net income (loss) per common share is computed by dividing the net income (loss) per common share by the weighted-average number of common shares outstanding for the period. Diluted net income (loss) per common share is computed by adjusting net income (loss) to reallocate undistributed earnings based on the potential impact of dilutive securities. Diluted net loss per common share is computed by dividing the diluted net loss by the weighted-average number of common shares outstanding for the period, including potential dilutive common shares. For purpose of this calculation, outstanding stock options, SAFE, convertible preferred stock and unvested restricted common stock are considered potential dilutive common shares.

In periods in which the Company reported a net loss, diluted net loss per common share was the same as basic net loss per common share, since dilutive common shares were not assumed to have been issued if their effect was anti-dilutive. The Company reported a net loss for the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and for the nine months ended September 30, 2021 (unaudited).

Recently Adopted Accounting Pronouncements

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* ("ASU 2016-02"), which sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e., lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less may be accounted for similar to existing guidance for operating leases today. For non-public entities, ASU 2016-02 is effective for annual reporting periods beginning after December 15, 2021, including interim periods within those fiscal years, and early adoption is permitted. The Company elected to early adopt ASU 2016-02 as of June 22, 2020 (inception) (see Note 11).

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes (ASC 740): Simplifying the Accounting for Income Taxes* ("ASU 2019-12"). ASU 2019-12 simplifies the accounting for income taxes by

removing certain exceptions to the general principles in ASC 740 and clarifies and amends existing guidance to improve consistent application. The amendment that removed the incremental approach for intra-period tax allocations when there is a loss from continuing operations and income or a gain from other items, including, but not limited to discontinued operations or other comprehensive income should be applied on a prospective basis. The Company early adopted ASU 2019-12 effective January 1, 2021. The adoption of this new standard did not have a material impact on the Company's financial statements.

Recently Issued Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies and adopted by the Company as of the specified effective date. The Company qualifies as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012 and has elected not to "opt out" of the extended transition related to complying with new or revised accounting standards, which means that when a standard is issued or revised and it has different application dates for public and non-public companies, the Company can adopt the new or revised standard at the time non-public companies adopt the new or revised standard and can do so until such time that the Company either (i) irrevocably elects to "opt out" of such extended transition period or (ii) no longer qualifies as an emerging growth company. The Company may choose to early adopt any new or revised accounting standards whenever such early adoption is permitted for non-public companies.

In August 2020, the FASB issued ASU No. 2020-06, *Debt, Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, which, among other things, provides guidance on how to account for contracts on an entity's own equity. This ASU simplifies the accounting for certain financial instruments with characteristics of liabilities and equity. Specifically, the ASU eliminated the need for the Company to assess whether a contract on the entity's own equity (1) permits settlement in unregistered shares, (2) whether counterparty rights rank higher than shareholder's rights, and (3) whether collateral is required. In addition, the ASU requires incremental disclosure related to contracts on the entity's own equity and clarifies the treatment of certain financial instruments accounted for under this ASU on earnings per share. The ASU also simplifies the accounting for convertible instruments by removing the beneficial conversion feature and cash conversion feature separation models. This ASU may be applied on a full retrospective or modified retrospective basis. This ASU is effective for private companies for fiscal years beginning after December 15, 2023, with early adoption permitted. The Company does not expect the adoption to materially impact its financial position and results of operations.

3. Fair Value Measurements

The following table presents the Company's fair value hierarchy for its assets and liabilities items that are measured at fair value on a recurring basis as of December 31, 2020 and September 30, 2021 (unaudited), by level within the fair value hierarchy (in thousands):

	Fair Value Measurement at December 31, 2020 Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents (money market)	\$20,938	\$ —	\$ —	\$20,938
	<u>\$20,938</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$20,938</u>
Liabilities:				
Related party antidilution obligation	\$ —	\$ —	\$4,247	\$ 4,247
Series A preferred stock tranche obligation	—	—	303	303
	<u>\$ —</u>	<u>\$ —</u>	<u>\$4,550</u>	<u>\$ 4,550</u>

	Fair Value Measurement at September 30, 2021 (Unaudited) Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents (money market)	\$12,942	\$ —	\$ —	\$12,942
Restricted cash non-current	927	—	—	927
	<u>\$13,869</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$13,869</u>

The Company evaluates transfers between levels at the end of each reporting period. There were no transfers between Level 1, Level 2 or Level 3 during the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and for the nine months ended September 30, 2021 (unaudited).

Related Party Antidilution Obligation

The Company was obligated to issue Series A convertible preferred stock with an antidilution provision as part of a license agreement with Amgen (see Note 12). The Related Party Antidilution Obligation is included within the Level 3 fair value hierarchy. The Related Party Antidilution Obligation was valued using a probability-weighted expected return method. The valuation model requires a variety of inputs, including the probability of occurrence of events that would trigger the issuance of additional shares, the expected timing of such events, the expected value of the contingently issuable equity upon occurrence of a triggering event and a discount rate. The Related Party Antidilution Obligation was remeasured at each reporting date, with changes in fair value recognized within changes in fair value of the Related Party Antidilution Obligation in the consolidated statements of operations and comprehensive loss.

The significant unobservable inputs used in the valuation model to measure the Related Party Antidilution Obligation that are categorized within Level 3 of the fair value hierarchy, as of December 31, 2020 are as follows:

Expected term (years)	0.83
Risk-free rate	0.15%
Probability of finance event occurring	85%

Upon entering into the license agreement with Amgen in July 2020, the Company recorded a \$20.4 million liability related to the Related Party Antidilution Obligation. On September 18, 2020, the Company completed

[Table of Contents](#)

the first closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement which triggered the partial settlement of a Related Party Antidilution Obligation resulting in the issuance of 6,928,566 Series A convertible preferred stock to Amgen with a fair value of \$17.5 million. As such, on September 18, 2020, the Related Party Antidilution Obligation was partially settled through this issuance of \$17.5 million of Series A preferred stock.

On May 28, 2021, the Company completed the second closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement which resulted in the Company raising net cash proceeds from financing activities in excess of the \$45.0 million Related Party Antidilution Obligation cap. The second closing triggered the settlement of the remaining Related Party Antidilution Obligation, resulting in the issuance of 1,963,093 shares of Series A convertible preferred stock to Amgen with a fair value of \$5.1 million.

Series A Preferred Stock Tranche Obligation

The Series A Preferred Stock Tranche Obligation was valued using a probability-weighted present value model. The valuation model considered the probability of closing the tranche, the estimated future value of the Series A convertible preferred stock to be issued at each closing and the investment required at each closing. Future values were converted to present value using a discount rate appropriate for probability-adjusted cash flows.

The significant unobservable inputs used in the valuation model to measure the Series A Preferred Stock Tranche Obligation that is categorized within Level 3 of the fair value hierarchy as of December 31, 2020 and May 1, 2021 (valuation) are as follows:

	December 31, 2020	May 1, 2021
Probability of meeting Series A milestones	85%	95%
Time until Series A milestones (years)	0.83	0.50
Risk-free rate	0.08%	0.03%
Expected value adjustment to Series A if second tranche milestones are not met	10%	10%

The Related Party Antidilution Obligation and Series A Preferred Stock Tranche Obligation were settled during the nine months ended September 30, 2021 (unaudited) (see Note 7).

The following table sets forth a rollforward of changes in the fair value of financial liabilities classified as Level 3 in the fair valued hierarchy (in thousands):

	Related Party Antidilution Obligation	Series A Preferred Stock Tranche Obligation	Total
Beginning balance at June 22, 2020 (inception)	\$ —	\$ —	\$ —
Issuance of related party antidilution obligation and Series A preferred stock tranche obligation	20,423	279	20,702
Change in fair value	1,307	24	1,331
Issuance of Series A preferred shares in partial settlement of related party antidilution obligation	(17,483)	—	(17,483)
Ending balance at December 31, 2020	\$ 4,247	\$ 303	\$ 4,550
Change in fair value through the settlement date	836	28	864
Reclassification of Series A preferred stock tranche obligation and related party antidilution obligation upon settlement	(5,083)	(331)	(5,414)
Ending balance at September 30, 2021 (unaudited)	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>

[Table of Contents](#)

4. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consisted of the following (in thousands):

	December 31, 2020	September 30, 2021 (Unaudited)
Research and development	\$ 1,075	\$ 1,025
Other	70	225
Total	\$ 1,145	\$ 1,250

5. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consisted of the following (in thousands):

	December 31, 2020	September 30, 2021 (Unaudited)
Research and development	\$ 292	\$ 1,306
Payroll and employee related	512	1,330
Professional fees	68	1,438
Other	16	63
Total	\$ 888	\$ 4,137

6. Stock-Based Compensation

2020 Equity Incentive Plan

The Company's 2020 Equity Incentive Plan (the "2020 Plan") provides for the Company to grant incentive stock options or non-qualified stock options, stock appreciation rights, restricted stock awards, restricted stock units, and other equity awards to employees, directors, and consultants of the Company. The 2020 Plan is administered by the Board or, at the discretion of the Board, by a committee of the Board. The Board may also delegate to one or more officers of the Company the power to grant awards to employees and certain officers of the Company. The exercise prices, vesting and other restrictions are determined at the discretion of the Board, or its committee or any such officer if so delegated.

Under the 2020 Plan, the Company authorized 1,499,040 shares of its common stock for issuance upon exercise of options granted under the 2020 Plan as of December 31, 2020. On June 4, 2021, the Company amended the 2020 Plan to increase the aggregate number of shares of the Company's common stock reserved for issuance pursuant to the 2020 Plan by 624,600 shares, from 1,499,040 shares to a new total of 2,123,640 shares, and increased the aggregate number of shares of the Company's common stock that may be issued pursuant to the exercise of incentive stock options by 1,873,800 shares, from 4,497,122 shares to a new total of 6,370,922 shares. On August 12, 2021, the Company amended the 2020 Plan to increase the aggregate number of shares of the Company's common stock reserve for issuance pursuant to the 2020 Plan by 1,262,080 shares to a new total of 3,385,720 shares.

Options under the 2020 Plan may be designated as incentive stock options or non-statutory stock options. The options granted under the 2020 Plan are either service-based options or performance-based options.

Service-Based Stock Options

The Company issues stock options to directors, employees, and consultants under the 2020 Plan. Options granted by the Company vest over periods of 36-48 months, subject in each case to the individual's continued

[Table of Contents](#)

service through the applicable vesting date. Options vest either (i) 25% at the one-year anniversary followed by 36 equal monthly installments beginning one month after the one-year anniversary of the vesting start date or (ii) 36 equal monthly installments beginning one month after the vesting start date. Options generally expire 10 years after the date of the grant.

The following table summarizes the activity of the Company's options to purchase common stock for the period from June 22, 2020 (inception) to December 31, 2020:

	Number of Shares	Weighted- Average Grant Date Fair Value	Weighted- Average Exercise Price Per Share	Weighted- Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of June 22, 2020 (inception)	—	\$ —	\$ —		
Granted	951,848	2.72	1.89		
Exercised	—	—	—		
Forfeited	—	—	—		
Expired	—	—	—		
Outstanding as of December 31, 2020	<u>951,848</u>	<u>\$ 2.72</u>	<u>\$ 1.89</u>	<u>9.88</u>	<u>\$ 1,557</u>
Vested and exercisable as of December 31, 2020	2,503	\$ 2.72	\$ 1.89	9.88	\$ 4
Vested and expected to vest as of December 31, 2020	951,848	\$ 2.72	\$ 1.89	9.88	\$ 1,557

The total fair value of options vested during the period from June 22, 2020 (inception) to December 31, 2020 was approximately \$7 thousand.

The following table summarizes the activity of the Company's options to purchase common stock for the nine months ended September 30, 2021 (unaudited):

	Number of Shares	Weighted- Average Grant Date Fair Value	Weighted- Average Exercise Price Per Share	Weighted- Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2020	951,848	\$ 2.72	\$ 1.89	9.88	\$ 1,557
Granted	1,740,503	3.58	5.16		
Exercised	—	—	—		
Forfeited	—	—	—		
Expired	—	—	—		
Outstanding as of September 30, 2021 (unaudited)	<u>2,692,351</u>	<u>—</u>	<u>\$ 4.00</u>	<u>9.56</u>	<u>\$ 6,871</u>
Vested and exercisable as of September 30, 2021 (unaudited)	261,505	\$ 2.81	\$ 2.20	9.19	\$ 1,138
Vested and expected to vest as of September 30, 2021 (unaudited)	2,692,351	\$ 3.28	\$ 4.00	9.56	\$ 6,871

The total fair value of options vested during the nine months ended September 30, 2021 (unaudited) was approximately \$731 thousand.

[Table of Contents](#)

Stock Option Valuation

The following assumptions on a weighted-average basis were used to determine the fair value of stock options for the following periods:

	Period from June 22, 2020 (Inception) to December 31, 2020	Nine Months Ended September 30, 2021 (Unaudited)
Weighted-average risk-free interest rate	0.5%	0.9%
Weighted-average expected term (in years)	5.9	6.0
Expected volatility	80.4% - 81.0%	78.6% - 80.2%
Expected dividend yield	0.0%	0.0%
Fair value of common stock	\$ 3.53	\$ 5.25
Weighted-average fair value	\$ 2.72	\$ 3.58

Performance-Based Stock Options

During the period from June 22, 2020 (inception) to December 31, 2020, the Company granted performance-based stock options to purchase 229,019 shares of common stock. The performance-based options commence vesting upon the Company completing the second tranche of its Series A convertible preferred stock financing and then vest over 48 equal monthly installments. The Company completed the second tranche of its Series A convertible preferred stock financing in May 2021.

The following table summarizes the activity of the Company's performance-based options to purchase common stock for the period from June 22, 2020 (inception) to December 31, 2020:

	Number of Shares	Weighted- Average Grant Date Fair Value	Weighted- Average Exercise Price Per Share	Weighted- Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of June 22, 2020 (inception)	—	\$ —	\$ —		
Granted	229,019	2.76	1.89		
Exercised	—	—	—		
Forfeited	—	—	—		
Expired	—	—	—		
Outstanding as of December 31, 2020	<u>229,019</u>	<u>\$ 2.76</u>	<u>\$ 1.89</u>	<u>9.88</u>	<u>\$ 375</u>
Vested and exercisable as of December 31, 2020	—	\$ 2.76	\$ —		
Vested and expected to vest as of December 31, 2020	229,019	\$ 2.76	\$ 1.89	9.88	\$ 375

No options vested during the period from June 22, 2020 (inception) to December 31, 2020.

[Table of Contents](#)

The following table summarizes the activity of the Company's performance-based options to purchase common stock for the nine months ended September 30, 2021 (unaudited):

	Number of Shares	Weighted-Average Grant Date Fair Value	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2020	229,019	\$ 2.76	\$ 1.89	9.88	\$ 375
Granted	—	—	—	—	—
Exercised	—	—	—	—	—
Forfeited	—	—	—	—	—
Expired	—	—	—	—	—
Outstanding as of September 30, 2021 (unaudited)	229,019	\$ 2.76	\$ 1.89	9.13	\$ 1,067
Vested and exercisable as of September 30, 2021 (unaudited)	23,856	\$ 2.76	\$ 1.89	9.13	\$ 111
Vested and expected to vest as of September 30, 2021 (unaudited)	229,019	\$ 2.76	\$ 1.89	9.13	\$ 1,067

The total fair value of options vested during the nine months ended September 30, 2021 (unaudited) was approximately \$66 thousand.

The fair value for performance options granted under the stock option plan are determined at the date of grant using the Black-Scholes option-pricing model, and the following assumptions were used for grants:

	Period from June 22, 2020 (Inception) to December 31, 2020
Weighted-average risk-free interest rate	0.5%
Expected term (in years)	5.9
Expected volatility	81.0%
Expected dividend yield	0.0%
Fair value of common stock	\$ 3.53
Weighted-average fair value	\$ 2.76

Restricted Stock

The following table summarizes the activity of the Company's restricted stock:

	Period from June 22, 2020 (Inception) to December 31, 2020	Nine Months Ended September 30, 2021 (Unaudited)
Outstanding as of beginning of period	—	306,503
Granted	306,503	—
Forfeited/cancelled	—	(21,786)
Outstanding as of end of period	306,503	284,717
Vested during period	44,699	59,722
Outstanding unvested shares, expected to vest	261,804	180,296
Remaining weighted-average vesting period for unvested shares	3.33 years	2.58 years
Grant date fair value	\$ 2.41	\$ —
Amount grantees paid per share	\$ 0.0001	\$ —

[Table of Contents](#)

In July 2020, the Company granted 306,503 restricted shares that vest in 48 equal monthly installments commencing on the one-month anniversary of the vesting commencement date. Shares of restricted common stock granted to employees and directors are not deemed, for accounting purposes, to be outstanding until those shares have vested. For a period of up to 120 days from a grantee ceasing to provide services to the Company, the Company has an irrevocable option to repurchase unvested restricted shares at the lower of (i) the purchase price per share (\$0.0001) or (ii) the fair market value per share as of the date of repurchase. In July 2021, the Company exercised its option to repurchase 21,786 unvested restricted shares at their original purchase price after the grantee ceased providing services. The compensation expense relating to the remaining 14,273 restricted shares of the grantee that were not purchased by the Company was not material.

The fair value of the restricted shares granted was equal to the fair value of the Company's common stock on the date of grant. The fair value of the Company's common stock was determined using an option pricing method which utilized a market approach.

Stock-Based Compensation Expense

The Company recorded stock-based compensation of \$262 thousand, \$77 thousand, and \$1.3 million in the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020, and during the nine months ended September 30, 2021 (unaudited), respectively. Stock-based compensation expense was classified as follows in the consolidated statements of operations and comprehensive loss (in thousands):

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (Unaudited)	Nine Months Ended September 30, 2021 (Unaudited)
Research and development	\$ 93	\$ 27	\$ 839
General and administrative	169	50	484
Total stock-based compensation	<u>\$ 262</u>	<u>\$ 77</u>	<u>\$ 1,323</u>

As of December 31, 2020 and September 30, 2021 (unaudited), respectively, there is approximately \$2.5 million and \$7.8 million of unrecognized stock-based compensation expense related to service-based options to purchase common stock under the 2020 Plan, which is expected to vest over a weighted-average period of 3.62 years and 3.50 years.

As of December 31, 2020 and September 30, 2021 (unaudited), respectively, there is approximately \$0.6 million and \$0.3 million of unrecognized stock-based compensation expense related to performance-based options to purchase common stock under the 2020 Plan, which is expected to vest over a weighted-average period of 4.32 years and 3.50 years.

As of December 31, 2020 and September 30, 2021 (unaudited), respectively, there is approximately \$0.6 million and \$0.4 million of unrecognized stock-based compensation expense related to restricted stock under the 2020 Plan, which is expected to vest over a weighted-average period of 3.33 years and 2.58 years.

7. Preferred Stock

Simple Agreement for Future Equity

In July 2020, the Company entered into a Simple Agreement for Future Equity ("SAFE") with Atlas Venture Fund XII, L.P., a related party (see Note 13), receiving \$5.0 million of aggregate gross proceeds in exchange for the investor's right to participate in a future equity financing. The SAFE contained a number of

[Table of Contents](#)

conversion and redemption provisions, including settlement upon liquidity or dissolution events. On September 18, 2020, Atlas Venture Fund XII, L.P. exercised its right to convert the SAFE in connection with the Company's Series A equity financing and exchanged the SAFE for an aggregate of 1,963,093 shares of Series A convertible preferred stock, with a fair value of \$5.0 million at issuance. The fair value of the Series A convertible preferred stock issued in exchange for the SAFE was offset by \$46 thousand related to the Series A Preferred Stock Tranche Obligation, as discussed below.

Convertible Preferred Stock

Series A Convertible Preferred Stock and Series A Preferred Stock Tranche Obligation

On September 18, 2020, the Company entered into the Series A Convertible Preferred Stock Purchase Agreement with its initial investors committing to purchase an aggregate of \$50.0 million in shares of Series A convertible preferred stock. At the initial closing, 9,815,467 shares of Series A convertible preferred stock were issued by the Company at a purchase price of \$2.547 per share, for gross cash proceeds of \$25.0 million. The gross proceeds were offset by \$0.2 million of issuance costs and \$0.2 million related to the Series A Preferred Stock Tranche Obligation, discussed below.

Included in the terms of the September 2020 Series A Convertible Preferred Stock Purchase Agreement were certain rights ("Series A Preferred Stock Tranche Obligation") granted to the investors who purchased the Series A convertible preferred stock in September 2020. The Series A Preferred Stock Tranche Obligation contingently obligated the investors to purchase, and the Company to sell, up to an aggregate of 7,852,373 shares of Series A convertible preferred stock at \$2.547 per share upon the satisfaction of specified research and development milestones by the Company.

The Company concluded that the Series A Preferred Stock Tranche Obligation met the definition of a freestanding financial instrument, as the Series A Preferred Stock Tranche Obligation was legally detachable and separately exercisable from the Series A convertible preferred stock. Therefore, the Company allocated the proceeds from the September 2020 issuance between the Series A Preferred Stock Tranche Obligation and the Series A convertible preferred stock, including those issued in exchange for the SAFE. As the Series A convertible preferred stock is redeemable upon a deemed liquidation event at the election of the holder-controlled Board, and therefore outside of the control of the Company, the Series A Preferred Stock Tranche Obligation was classified as a liability and recorded at its fair value of \$0.3 million at both inception and as of December 31, 2020. The Series A Preferred Stock Tranche Obligation was remeasured at fair value at each reporting period, with changes in fair value recorded in change in fair value of the Series A Preferred Stock Tranche Obligation in the consolidated statements of operations and comprehensive loss (see Note 3).

On May 28, 2021, the Company issued 7,852,373 shares of its Series A convertible preferred stock at \$2.547 per share, for which the Company received gross proceeds of \$20.0 million, offset by issuance costs of \$0.1 million. As a result of this issuance, the Series A Preferred Stock Tranche Obligation with a then fair value of approximately \$0.3 million was settled and reclassified to Series A convertible preferred stock in the consolidated balance sheet.

Series B Convertible Preferred Stock Financing

On August 13, 2021, the Company issued 25,657,096 shares of its Series B convertible preferred stock at \$3.5078 per share, for which the Company received gross proceeds of \$90.0 million. Issuance costs were \$0.3 million.

Upon issuance of each class of the Convertible Preferred Stock, the Company assessed the embedded conversion and liquidation features of the securities and determined that such features did not require the Company to separately account for these features. The Company also concluded that no beneficial conversion feature existed upon the issuance date of each class of the Convertible Preferred Stock or as of December 31, 2020 and September 30, 2021 (unaudited).

[Table of Contents](#)

The holders of Convertible Preferred Stock have the followings rights and privileges:

Dividends

Holders of the Convertible Preferred Stock are entitled to receive non-cumulative dividends when, as and if declared by the Board at a rate of 8% of the Original Issue Price (as defined below) per share (the “Dividend Rate”), subject to adjustment. Holders of Convertible Preferred Stock shall participate in any dividends payable to common stockholders on an as-converted basis. The Company has not, and has no plans to, declare dividends on any class of preferred or common stock.

Conversion

The holders of the Convertible Preferred Stock may convert, at any time, each share of the Convertible Preferred Stock into shares of common stock. In addition, upon either (a) the closing of the sale of shares of common stock to the public at a price of at least three times the Series A Original Issue Price (subject to adjustment) in an initial public offering with net proceeds to the Company of at least \$50.0 million or (b) the written consent of the holders of the outstanding shares of Convertible Preferred Stock, the Convertible Preferred Stock will automatically convert into common stock.

The conversion ratio of each series of the Convertible Preferred Stock is determined by dividing the Original Issuance Price of each series by the Conversion Price of each series. The Original Issuance Price per share is \$2.547 for Series A convertible preferred stock and \$3.5078 for Series B convertible preferred stock. The Conversion Price per share at issuance was \$7.063 for Series A convertible preferred stock and \$9.7278 for Series B convertible preferred stock, each subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization and other adjustments, including adjustment if common stock is issued for less than the Original Issue Price of each series of Convertible Preferred Stock. Accordingly, as of December 31, 2020 and September 30, 2021 (unaudited), each share of each series of Convertible Preferred Stock was convertible into shares of common stock on a one-for-one basis.

The Series A preferred stock is convertible into 6,745,679 and 10,285,077 shares of common stock as of December 31, 2020 and September 30, 2021 (unaudited), respectively. The Series B preferred stock is convertible into 9,251,793 shares of common stock as of September 30, 2021 (unaudited).

Liquidation

In the event of any liquidation, dissolution, or winding-up of the Company, which would include the sale of the Company, the holders of the then-outstanding Convertible Preferred Stock would be entitled to receive, in preferential payment to any distributions to the common stockholders, an amount equal to the greater of (i) the respective Original Issue Price of each series of the Convertible Preferred Stock, plus dividends declared but unpaid or (ii) the amount payable with respect to such share if it was converted to common stock immediately prior to settlement. In the event that there are additional assets to be distributed, the holders of the Convertible Preferred Stock will share in the distribution along with common stockholders as if the shares of Convertible Preferred Stock had converted to common stock immediately prior to the distribution.

Voting

The holders of Convertible Preferred Stock are entitled to vote, together with the holders of common stock, on matters submitted to stockholders for a vote. The holders of Convertible Preferred Stock are entitled to the number of votes equal to the number of shares of common stock into which each share of Convertible Preferred Stock could convert on the record date for determination of stockholders entitled to vote.

[Table of Contents](#)

8. Common Stock

The voting, dividend, and liquidation rights of the holders of the Company's common stock are subject to and qualified by the rights, powers, and preferences of the holders of the Convertible Preferred Stock. Each share of common stock entitles the holder to one vote for each share of common stock held. Common stockholders are entitled to receive dividends, as may be declared by the Company's Board, if any, subject to the respective preferential dividend rights of the Convertible Preferred Stock. Through December 31, 2020 and September 30, 2021 (unaudited), no dividends have been declared or paid.

The Company has reserved the following number of shares of common stock for the exercise of outstanding stock options and future issuance of stock-based awards.

	December 31, 2020	September 30, 2021 (Unaudited)
Common stock options	1,180,867	2,921,370
Shares available for issuance under the 2020 Plan	318,173	464,350
Series A convertible preferred stock outstanding	6,745,679	10,285,077
Series B convertible preferred stock outstanding	—	9,251,793
Total common stock reserved for future issuance	<u>8,244,719</u>	<u>22,922,590</u>

9. Net Loss per Share

Basic and diluted net loss per common share attributable to common stockholders was calculated as follows (in thousands, except share and per share amounts):

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (Unaudited)	Nine Months Ended September 30, 2021 (Unaudited)
Numerator:			
Net loss attributable to common stockholders	\$ (28,546)	\$ (24,310)	\$ (30,298)
Denominator:			
Weighted-average common shares outstanding, basic and diluted	<u>1,349,702</u>	<u>1,230,385</u>	<u>1,519,686</u>
Net loss per share attributable to common stockholders, basic and diluted	<u>\$ (21.15)</u>	<u>\$ (19.76)</u>	<u>\$ (19.94)</u>

[Table of Contents](#)

The Company's potentially dilutive securities have been excluded from the computation of diluted net loss per common share as the effect would be to reduce the net loss per common share. Therefore, the weighted-average number of common shares outstanding used to calculate both basic and diluted net loss per common share is the same. The Company excluded the following potential common shares, presented based on amounts outstanding at each period end, from the computation of diluted net loss per common share for the periods indicated because including them would have had an anti-dilutive effect:

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (Unaudited)	Nine Months Ended September 30, 2021 (Unaudited)
Series A convertible preferred stock	6,745,679	6,745,679	10,285,077
Series B convertible preferred stock	—	—	9,251,793
Related party antidilution obligation	707,880	707,880	—
Options to purchase common stock – service based	951,848	—	2,692,351
Options to purchase common stock – performance based	229,019	—	229,019
Unvested restricted common stock	261,807	280,963	180,297
Total	8,896,233	7,734,522	22,638,537

10. Income Taxes

The Company's income tax provision was computed based on the federal statutory rate and the average state statutory rates, net of the related federal benefit. The Company did not record a federal or state income tax provision or benefit during the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 (unaudited), and for the nine months ended September 30, 2021 (unaudited), respectively due to the pre-tax net losses incurred. In addition, the Company has recorded a full valuation allowance against its net deferred tax assets at December 31, 2020.

The Company's effective income tax rate differs from the statutory federal income tax rate as follows for the period from June 22, 2020 (inception) to December 31, 2020:

Statutory U.S. federal rate	21.00%
State income taxes (NoFB)	6.24%
Other permanent differences	(0.21%)
Research and development credits	0.22%
Valuation allowance	(27.25%)
Effective Tax Rate	<u>0.00%</u>

[Table of Contents](#)

Deferred income taxes reflect the net tax effects of loss and credit carryforwards and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The Company's deferred income tax assets and liabilities at December 31, 2020 were comprised of the following (in thousands):

	December 31, 2020
Deferred tax assets:	
Net operating loss carryforwards	\$ 1,432
Research and development credits	62
Intangible assets	6,032
Start-up costs	99
Accruals and other	155
Total deferred tax assets	<u>7,780</u>
Valuation allowance	<u>(7,780)</u>
Net deferred tax assets (liabilities)	<u>\$ —</u>

In assessing the realization of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Based on the level of historical operating results and the uncertainty of the economic conditions, the Company has recorded a valuation allowance of \$7.8 million at December 31, 2020.

At December 31, 2020, the Company had federal net operating losses ("NOLs") of approximately \$5.3 million and state NOLs of \$5.2 million. As a result of the Tax Act, for U.S. income tax purposes, NOLs generated for tax years beginning after December 31, 2017 carry forward indefinitely and can be used to offset taxable income. The total federal NOLs of \$5.3 million as of December 31, 2020 will not expire. The state NOL carryover of \$5.2 million will begin to expire in 2036.

Pursuant of Internal Revenue Code ("IRC") Sections 382 and 383, annual use of the Company's net operating loss and research and development credit carryforwards may be limited in the event a cumulative change in ownership of more than 50% occurs within a three-year period. The Company has not completed an ownership change analysis pursuant to IRC Section 382. If ownership changes within the meaning of IRC Section 382 are identified as having occurred, the amount of remaining tax attribute carryforwards available to offset future taxable income and income tax expense in future years may be significantly restricted or eliminated. Further, the Company's deferred tax assets associated with such tax attributes could be significantly reduced upon realization of an ownership change within the meaning of IRC Section 382 that has occurred or may occur in the future. Any adjustment to the Company's tax attributes as a result of an ownership change will result in a corresponding decrease to the valuation allowance recorded against the Company's deferred tax assets. As of December 31, 2020, the Company also has state tax research and development credit carryforwards of approximately \$78 thousand to offset future income taxes, which will begin to expire in 2029. As of December 31, 2020, the Company also has no federal tax research and development credit carryforwards.

The Company's valuation allowance increased during the period from June 22, 2020 (inception) to December 31, 2020, due primarily to the generation of an intangible asset of \$6.1 million and \$1.4 million related to NOL carryforwards.

The Company has not incurred any material interest or penalties as of the current reporting date with respect to income tax matters. The Company does not expect that there will be unrecognized tax benefits of a significant

[Table of Contents](#)

nature that will increase or decrease within 12 months of the reporting date. The Company is subject to U.S. Federal income tax as well as income tax in Massachusetts. Carryforward attributes that were generated in years where the statute of limitations is closed may still be adjusted upon examination by the Internal Revenue Service or other respective tax authority.

The unrecognized tax benefit amounts are not reflected in the determination of the Company's deferred tax assets. If recognized, none of these amounts would affect the Company's effective tax rate, since it would be offset by an equal corresponding adjustment in the deferred tax asset valuation allowance. The Company assesses the uncertainty in its income tax positions to determine whether a tax position of the Company is more likely than not to be sustained upon examination, including resolution of any related appeals of litigation processes, based on the technical merits of the position. For tax positions meeting the more-likely-than-not threshold, the tax amount recognized in the financial statements is reduced by the largest benefit that has a greater than 50% likelihood of being realized upon the ultimate settlement with the relevant taxing authority. As of December 31, 2020 and September 30, 2021 (unaudited), the Company had not recorded any reserves for uncertain tax positions or related interest and penalties.

The Company files income tax returns as prescribed by the tax laws of the jurisdictions in which it operates. In the normal course of business, the Company is subject to examination by federal and state jurisdictions, where applicable. As of September 30, 2021 (unaudited), there were no pending tax examinations. No federal or state tax audits are currently in process.

11. Leases

In February 2021, the Company entered into an equipment lease with lease term of 24 months commencing in April 2021. The lease includes an option to purchase the equipment at fair market value at the end of the lease term.

In July 2021, the Company entered into a lease for laboratory space in Cambridge, Massachusetts, with an initial term of one year commencing in April 2021, with a month-to-month option to renew at the end of the initial lease term (see Note 13). At inception, the Company determined that it was reasonably certain that it would elect options to renew the lease through September 2022 and have included these renewal options into the determination of the lease term.

In September 2021, the Company entered into a lease for laboratory and office space in Watertown, Massachusetts with an initial term of ten years, and a five-year renewal option at the end of the initial lease term. The monthly lease payment is approximately \$0.2 million with annual escalation of approximately 3%. The lease includes a \$3.7 million construction allowance. The lease is expected to commence in the second quarter of 2022 when the leased space is expected to be made available for the Company's use.

The components of lease expense are as follows:

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020 (Unaudited)	Nine Months Ended September 30, 2021 (Unaudited)
Operating lease cost	\$ —	\$ —	\$ 160
Short term lease cost	23	13	103
Variable lease cost	—	—	5
Finance lease cost:			
Amortization of right-to-use assets	—	—	8
Interest on lease liabilities	—	—	2
Total finance lease cost	\$ —	\$ —	\$ 10

[Table of Contents](#)

Supplemental cash flow information related to leases are as follows:

	Period from June 22, 2020 (Inception) to December 31, 2020	Period from June 22, 2020 (Inception) to September 30, 2020	Nine Months Ended September 30, 2021 (Unaudited)
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows from operating leases	\$ —	\$ —	\$ 129
Operating cash flows from finance leases	\$ —	\$ —	\$ 2
Financing cash flows from finance leases	\$ —	\$ —	\$ 9

At September 30, 2021, the weighted-average remaining lease terms related to the finance and operating leases are 1.2 years and 1.8 years, respectively.

As the Company's operating leases did not provide an implicit rate, the Company used its incremental borrowing rate based on the information available in determining the present value of lease payments. The Company's incremental borrowing rate was based on the term of the lease, the economic environment of the lease and reflect the rate the Company would have had to pay to borrow on a secured basis. The weighted-average discount rates used at the time that the leases were evaluated were 3.26% for the finance leases and 5.35% for the operating leases.

Future minimum lease payments due under the Company's operating and finance lease liabilities as of September 30, 2021 are as follows:

Nine months ended September 30, 2021 (Unaudited)	Operating Leases	Financing Leases
2021 (excluding nine months ended September 30, 2021)	\$ 82	\$ 11
2022	265	45
2023	41	24
2024	—	—
2025	—	—
Thereafter	—	—
Total lease payments	388	80
Less: imputed interest	(12)	(4)
Total future minimum lease payments	\$ 376	\$ 76

12. Related Party License Agreement

Amgen, Inc.

In July 2020, the Company entered into an Exclusive License Agreement and Letter Agreement (collectively, the "Amgen Agreement") with Amgen, pursuant to which the Company has been granted an exclusive, royalty-bearing sublicensable license to certain intellectual property rights owned or controlled by Amgen, to commercially develop, manufacture, use, distribute and sell therapeutic products containing compounds that bind to Triggering Receptor Expressed on Myeloid Cells 2 ("TREM2").

As initial consideration for the license, the Company made a one-time, non-creditable, non-refundable upfront payment of \$0.5 million. As additional consideration for the license, the Company is required to pay Amgen up to \$80.0 million in the aggregate upon the achievement of specified regulatory milestones for the first monoclonal antibody agonist of TREM2 agonist ("mAb") product and the first small molecule TREM2 agonist

[Table of Contents](#)

product and aggregate milestone payments of up to \$350.0 million upon the achievement of specific commercial milestones across all mAb products and small molecule products. No regulatory or commercial milestones have been achieved to date under the Amgen Agreement. The Company is also required to pay tiered royalties of low to mid single-digit percentages on annual net sales of the products covered by the license. In the event that the exploitation of a product is not covered by a valid claim within the licensed patent rights, then the royalty rate with respect to the net sales shall be subject to a customary reduction by a certain percentage. The royalty term will terminate on a country-by-country basis on the later of (i) the expiration date of the last valid claim within the licensed patent rights, and (ii) the tenth (10th) anniversary of the first commercial sale of such product in such country. Further, the Company is required to reimburse Amgen for amounts it paid to its contract manufacturers on the Company's behalf of \$3.2 million through September 30, 2021 (unaudited). These costs are recognized as research and development expense over the period that the goods are provided, as applicable.

In addition to the cash consideration described above, the Company agreed to issue Series A convertible preferred stock to Amgen in an amount equal to 25% of the Company's capital stock on a fully diluted basis (the "Related Party Antidilution Obligation") until the Company has raised an aggregate of \$45.0 million net cash proceeds from equity financings. The Company determined that the Related Party Antidilution Obligation was required to be recorded as a liability because it was a freestanding instrument that would require the Company to transfer assets to settle the obligation and it is indexed to an obligation to contingently redeem the Company's equity shares. Accordingly, the Company recognized the liability at fair value on the acquisition date and recognizes changes in the fair value of the anti-dilution rights at each subsequent reporting period in the change in fair value of the Related Party Antidilution Obligation in the consolidated statements of operations and comprehensive loss (see Note 3).

On September 18, 2020, the Company completed the first closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement which triggered the Related Party Antidilution Obligation resulting in the issuance of 6,928,566 Series A convertible preferred stock to Amgen with a fair value of \$17.5 million.

On May 28, 2021, the Company completed the second closing pursuant to the Series A Convertible Preferred Stock Purchase Agreement which resulted in the Company raising net cash proceeds from financing activities in excess of the \$45.0 million Related Party Antidilution Obligation cap. Amgen received an additional 1,963,093 Series A convertible preferred stock with a fair value of \$5.1 million.

As of September 30, 2021, Amgen owned approximately 15.08% of the Company's outstanding shares of capital stock.

The Company determined that the Amgen Agreement represented an asset acquisition of IPR&D assets with no alternative future use and recognized the aggregate acquisition cost as related party acquired in-process research and development expense in the consolidated statement of operations and comprehensive loss. The acquisition did not qualify as a business combination as the acquisition did not include both an input and substantive processes, including an assembled workforce, that together contribute to the ability to create outputs. For each of the periods from June 22, 2020 (inception) to December 31, 2020 and June 22, 2020 (inception) to September 30, 2020 (unaudited), the Company recognized \$20.9 million of related party acquired in-process research and development expense in connection with the consideration due under the Amgen Agreement. The \$20.9 million consisted of (i) \$20.4 million initial recognition of the Related Party Antidilution Obligation that obligates the Company to issue shares of the Series A convertible preferred stock equal to 25% until the Company has raised \$45.0 million in net cash proceeds from equity financings and (ii) the upfront cash consideration for the license arrangement of \$0.5 million. The Company did not incur IPR&D expense in connection with the Amgen Agreement during the nine months ended September 30, 2021 (unaudited).

Amounts paid with respect to goods provided by Amgen on the Company's behalf under the Amgen Agreement are recognized as research and development expense as such amounts are incurred. For the period from June 22, 2020 (inception) to December 31, 2020, period from June 22, 2020 (inception) to September 30, 2020

(unaudited), and for the nine months ended September 30, 2021 (unaudited), the Company recognized \$0.8 million, \$0.4 million and \$2.4 million, respectively, of expense in connection with goods provided by Amgen.

13. Related Party Transactions

Atlas

The Company entered into various lease agreements with Atlas Venture Fund XII, L.P., a principal stockholder of the Company, and incurred lease costs of less than \$0.1 million for the period from June 22, 2020 (inception) to December 31, 2020, less than \$0.1 million for the period from June 22, 2020 (inception) to September 30, 2020 (unaudited), and \$0.2 million for the nine months ended September 30, 2021 (unaudited). The lease payments are included in general and administrative expenses in the consolidated statements of operations and comprehensive loss. The Company recorded an operating lease right-of-use asset and a lease liability for \$0.4 million as of September 30, 2021 (unaudited). The right-of-use asset is included in operating lease right-of-use assets and the lease liability is included as an operating lease liability in the Company's consolidated balance sheet as of September 30, 2021 (unaudited). In addition, as of December 31, 2020, the Company recognized \$9 thousand in accounts payable and as of September 30, 2021 (unaudited), the Company recognized \$120 thousand in accrued expenses associated with the leases.

In September 2021, the Company terminated its short-term related party leases with Atlas Venture Fund XII, L.P. The effective termination date of the leases was in the fourth quarter of 2021. In June 2020, the Company also issued SAFE to Atlas Venture Fund XII, L.P which was exchanged in September 2020 for an aggregate of 1,963,093 shares of Series A convertible preferred stock, with a fair value of \$5.0 million at issuance. (see Note 7)

Amgen, Inc.

Under the Amgen Agreement, the Company was obligated to issue shares of Series A convertible preferred stock to Amgen, a principal stockholder of the Company. Additionally, in consideration for the rights assigned and license conveyed under the Amgen Agreement, Amgen received upfront consideration in the form of Series A convertible preferred stock, is entitled to receive milestone and royalty payments upon specified conditions and received payments from the Company for providing ongoing services under the agreement (see Note 12).

Expenses to reimburse Amgen's contract manufacturers incurred by the Company were \$0.8 million, \$0.4 million and \$2.6 million in the period from June 22, 2020 (inception) to December 31, 2020, the period from June 22, 2020 (inception) to September 30, 2020 (unaudited) and during the nine months ended September 30, 2021 (unaudited), respectively. These costs are included in research and development expenses in the consolidated statements of operations and comprehensive loss.

As of December 31, 2020, \$0.4 million was due to Amgen by the Company and was included in accounts payable in the consolidated balance sheet. As of September 30, 2021 (unaudited), \$1.9 million was due to Amgen by the Company. Of this amount, \$1.7 million and \$0.2 million was included in accounts payable and accrued expenses and other current liabilities, respectively in the Company's consolidated balance sheet as of September 30, 2021 (unaudited).

As of December 31, 2020, \$0.4 million was associated with a prepaid reservation fee related to services due to the Company by Amgen. The amounts was included in prepaid expenses and other current assets in the Company's consolidated balance sheet as of December 31, 2020. The Company did not have any amounts in connection with prepaid reservation fees as of September 30, 2021 (unaudited).

14. Commitments and Contingencies

License Agreement

The Company entered into a license agreement with Amgen (see Note 12).

Letter of Credit

In September 2021, in connection with the Watertown, Massachusetts lease, the Company entered into a \$0.9 million standby letter of credit which initially expires on September 10, 2022. The standby letter of credit will automatically renew for subsequent annual periods through December 2032. Remittance of funds from the letter of credit was not probable and the full amount was available as of September 2021. The Company did not recognize a liability in the condensed consolidated balance sheet.

Purchase Commitment

In August 2021, the Company entered into a letter agreement with FUJIFILM, its contract manufacturer, to purchase goods and was required to make a non-refundable prepayment of \$4.5 million. The prepayment was made in October 2021.

Contingencies

From time to time, the Company may have certain contingent liabilities that arise in the ordinary course of business. The Company accrues a liability for such matters when it is probable that future expenses will be incurred and can be reasonably estimated. During the period from June 22, 2020 (inception) to December 31, 2020 and the nine months ended September 30, 2021 (unaudited), the Company was not a party to any pending material litigation or other material legal proceedings.

401(k) Plan

The Company has a defined-contribution plan under Section 401(k) of the Internal Revenue Code of 1986 (the "401(k) Plan"). The 401(k) Plan covers all employees who meet defined minimum age and service requirements and allows participants to defer a portion of their annual compensation on a pre-tax basis. As currently established, the Company is not required to make, and to date has not made, any contributions to the 401(k) Plan.

Indemnification Agreements

In the ordinary course of business, the Company may provide indemnification of varying scope and terms to vendors, lessors, contract research organizations, business partners, and other parties with respect to certain matters including, but not limited to, losses arising out of breach of such agreements or from intellectual property infringement claims made by third parties. In addition, the Company has entered into indemnification agreements with members of its Board and certain of its executive officers that will require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or service as directors or officers. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in many cases, unlimited. The Company has not incurred any material costs as a result of such indemnifications and is not currently aware of any indemnification claims.

Legal Proceedings

The Company is not currently party to any material legal proceedings. At each reporting date, the Company evaluates whether or not a potential loss amount or a potential range of loss is probable and reasonably estimable under the provisions of the authoritative guidance that addresses accounting for contingencies. The Company expenses as incurred the costs related to such legal proceedings.

15. Subsequent Events

For its consolidated financial statements as of December 31, 2020 and for the period from June 22, 2020 (inception) to December 31, 2020, the Company has evaluated subsequent events through October 8, 2021, the date on which those financial statements were issued.

Reverse Stock Split

On December 30, 2021, the Company effected a one-for-2.7732 reverse stock split of its issued and outstanding shares of common stock and a proportional adjustment to the existing conversion ratios of each series of the Company's preferred stock (see Note 7). Accordingly, all share and per share amounts for all periods presented in the accompanying consolidated financial statements and notes thereto have been adjusted retroactively, where applicable, to reflect this stock split and adjustment of the preferred stock conversion ratios.

16. Subsequent Events (unaudited)

For its interim consolidated financial statements as of September 30, 2021 and for the nine months then ended, the Company evaluated subsequent events through November 19, 2021, the date on which those financial statements were issued.

Corporate Headquarters Lease

In October 2021, the Company entered into a lease for its corporate headquarters in Cambridge, Massachusetts with an initial term of 14 months. The monthly lease payment and security deposit are each approximately \$49 thousand.

Grant of Stock Options under the 2020 Plan

The Company granted options to purchase 109,258 and 238,350 shares of common stock in October and November 2021, respectively, to its employees pursuant to the 2020 Plan. The exercise price of these grants is \$9.57.

The Company granted options to purchase 7,788 shares of common stock in December 2021 to its employees pursuant to the 2020 Plan. The exercise price of these grants is \$11.79.

FUJIFILM Agreement

In November 2021, the Company entered into a statement of work with FUJIFILM under our existing master services agreement for the manufacturing of VGL101. In connection with this agreement, the Company will pay FUJIFILM \$3.8 million, which is expected to be incurred over approximately 2 years.

2021 Stock Option and Incentive Plan

On November 16, 2021, the Company's board of directors adopted, and on December 3, 2021 its stockholders approved, the 2021 Stock Option and Incentive Plan (the "2021 Plan"), which will become effective immediately preceding the date on which the registration statement for the Company's initial public offering is declared effective by the SEC. The 2021 Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock-based awards. The number of shares reserved for issuance under the 2021 Plan is initially equal to 3,145,281. In addition, the number of shares of the Company's common stock reserved for issuance under the 2021 Plan will automatically increase on the first day of each calendar year, beginning on January 1, 2022 and each January 1 thereafter, by an amount equal to the lesser of (i) five percent (5%) of the cumulative number of shares of common stock issued and outstanding on the immediately preceding December 31, or (ii) such lesser number of shares of common stock as determined by the compensation committee of the board of directors.

The shares of common stock underlying any awards under the 2021 Plan or the 2020 Plan that are forfeited, cancelled, held back upon exercise or settlement of an award to satisfy the exercise price or tax withholding,

reacquired by us prior to vesting, satisfied without the issuance of stock, expire or are otherwise terminated will be added back to the shares of common stock available for issuance under the 2021 Plan.

2021 Employee Stock Purchase Plan

On November 16, 2021, the Company's board of directors adopted, and on December 3, 2021 its stockholders approved, the 2021 Employee Stock Purchase Plan (the "2021 ESPP"), which will become effective immediately preceding the date on which the registration statement for the Company's initial public offering is declared effective by the SEC. A total of 286,127 shares of common stock were initially reserved for issuance under this plan. The number of shares of common stock that may be issued under the 2021 ESPP shall cumulatively increase beginning on January 1, 2023 and each January 1 thereafter through January 1, 2032, by the least of (A) 286,127 shares of common stock, (B) one percent (1%) of the cumulative number of shares of common stock issued and outstanding on the immediately preceding December 31 or (C) such lesser number of shares of common stock as determined by the administrator of the 2021 ESPP.

7,000,000 Shares



Common Stock

PRELIMINARY PROSPECTUS

Morgan Stanley

Jefferies

Stifel

Guggenheim Securities

Until _____, 2022 (25 days after the date of this prospectus), all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This delivery requirement is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

, 2022

PART II**Information Not Required in Prospectus****Item 13. Other Expenses of Issuance and Distribution.**

The following table sets forth the fees and expenses, other than underwriting discounts and commissions, payable in connection with the registration of the common stock hereunder. All amounts are estimates except the SEC registration fee.

	Amount to be Paid
SEC registration fee	\$ 12,686
FINRA filing fee	21,333
Nasdaq Global Market listing fee	150,000
Printing and mailing	300,000
Legal fees and expenses	1,500,000
Accounting fees and expenses	870,000
Transfer agent and registrar fees and expenses	10,000
Miscellaneous	235,981
Total	<u>\$ 3,100,000</u>

Item 14. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law, or DGCL, authorizes a corporation to indemnify its directors and officers against liabilities arising out of actions, suits and proceedings to which they are made or threatened to be made a party by reason of the fact that they have served or are currently serving as a director or officer to a corporation. The indemnity may cover expenses (including attorneys' fees) judgments, fines and amounts paid in settlement actually and reasonably incurred by the director or officer in connection with any such action, suit or proceeding. Section 145 permits corporations to pay expenses (including attorneys' fees) incurred by directors and officers in advance of the final disposition of such action, suit or proceeding. In addition, Section 145 provides that a corporation has the power to purchase and maintain insurance on behalf of its directors and officers against any liability asserted against them and incurred by them in their capacity as a director or officer, or arising out of their status as such, whether or not the corporation would have the power to indemnify the director or officer against such liability under Section 145.

We have adopted provisions in our certificate of incorporation to be in effect immediately prior to the closing of this offering and bylaws to be in effect upon the effectiveness of this registration statement that limit or eliminate the personal liability of our directors to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended. Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any unlawful payments related to dividends or unlawful stock purchases, redemptions or other distributions; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not alter director liability under the federal securities laws and do not affect the availability of equitable remedies such as an injunction or rescission.

In addition, our bylaws provide that:

- we will indemnify our directors, officers and, in the discretion of our board of directors, certain employees to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended; and
- we will advance reasonable expenses, including attorneys' fees, to our directors and, in the discretion of our board of directors, to our officers and certain employees, in connection with legal proceedings relating to their service for or on behalf of us, subject to limited exceptions.

We have entered into indemnification agreements with each of our directors and intend to enter into such agreements with our executive officers. These agreements provide that we will indemnify each of our directors, our executive officers and, at times, their affiliates to the fullest extent permitted by Delaware law. We will advance expenses, including attorneys' fees (but excluding judgments, fines and settlement amounts), to each indemnified director, executive officer or affiliate in connection with any proceeding in which indemnification is available and we will indemnify our directors and officers for any action or proceeding arising out of that person's services as a director or officer brought on behalf of us or in furtherance of our rights. Additionally, certain of our directors or officers may have certain rights to indemnification, advancement of expenses or insurance provided by their affiliates or other third parties, which indemnification relates to and might apply to the same proceedings arising out of such director's or officer's services as a director referenced herein. Nonetheless, we have agreed in the indemnification agreements that our obligations to those same directors or officers are primary and any obligation of such affiliates or other third parties to advance expenses or to provide indemnification for the expenses or liabilities incurred by those directors are secondary.

We also maintain general liability insurance which covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers, including liabilities under the Securities Act of 1933, as amended (the Securities Act).

The underwriting agreement filed as Exhibit 1.1 to this registration statement provides for indemnification of us and our directors and officers by the underwriters against certain liabilities under the Securities Act and the Securities Exchange Act of 1934.

Item 15. Recent Sales of Unregistered Securities.

In the three years preceding the filing of this registration statement, we have issued the following securities that were not registered under the Securities Act:

(a) Issuances of Capital Stock

Set forth below is information regarding securities we have issued within the past three years that were not registered under the Securities Act.

In June and July 2020, we issued and sold an aggregate of 1,748,879 shares of Common Stock at a purchase price of \$0.0001 per share for an aggregate purchase price of approximately \$485.

In September 2020, we issued and sold an aggregate of 11,778,560 shares of Series A Preferred Stock at a purchase price of \$2.547 per share for an aggregate purchase price of approximately \$30 million (including \$5 million of outstanding simple agreement for future equity, or SAFE, which was converted into shares of Series A Preferred Stock). Additionally, we issued 6,928,566 shares of Series A Preferred Stock pursuant to certain agreements with Amgen Inc. See "Certain Relationships and Related Party Transaction—Agreements with Our Stockholders—Amgen Agreements."

In May 2021, we issued and sold an aggregate of 7,852,373 shares of Series A Preferred Stock at a purchase price of \$2.547 per share for an aggregate purchase price of approximately \$20 million. Additionally, we issued

Table of Contents

1,963,093 shares of Series A Preferred Stock pursuant to certain agreements with Amgen Inc. See “Certain Relationships and Related Party Transaction—Agreements with Our Stockholders—Amgen Agreements.”

In August 2021, we issued and sold an aggregate of 25,657,096 shares of Series B Preferred Stock at a purchase price of \$3.5078 per share for an aggregate purchase price of approximately \$90 million.

No underwriters were involved in the foregoing sales of securities. Unless otherwise stated, the sales of securities described above were deemed to be exempt from registration pursuant to Section 4(a)(2) of the Securities Act, including Regulation D and Rule 506 promulgated thereunder, as transactions by an issuer not involving a public offering. All of the purchasers in these transactions represented to us in connection with their purchase that they were acquiring the securities for investment and not distribution, that they could bear the risks of the investment and could hold the securities for an indefinite period of time. Such purchasers received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration or an available exemption from such registration. All of the foregoing securities are deemed restricted securities for the purposes of the Securities Act.

(b) Grants and Exercises of Stock Options

Through December 30, 2021, we have granted stock options to purchase an aggregate of 3,276,766 shares of our common stock, with a weighted average exercise price of \$4.46 per share, to employees, directors and consultants pursuant to the 2020 Plan. Since 2020, 20,394 shares of common stock have been issued upon the exercise of stock options pursuant to the 2020 Plan. In November 2021, 167,307 stock options previously issued pursuant to the 2020 Plan were forfeited.

The issuances of the securities described above were deemed to be exempt from registration pursuant to Section 4(a)(2) of the Securities Act or Rule 701 promulgated under the Securities Act as transactions pursuant to compensatory benefit plans. The shares of common stock issued upon the exercise of options are deemed to be restricted securities for purposes of the Securities Act.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

<u>Exhibit Number</u>	<u>Description</u>
1.1	<u>Form of Underwriting Agreement.</u>
3.1	<u>Second Amended and Restated Certificate of Incorporation of Registrant, as amended and as currently in effect.</u>
3.2	<u>Form of Third Amended and Restated Certificate of Incorporation of Registrant, to be in effect immediately prior to the completion of this offering.</u>
3.3*	<u>Bylaws of Registrant, as amended and currently in effect.</u>
3.4	<u>Form of Amended and Restated Bylaws of Registrant, to be in effect upon the effectiveness of this registration statement.</u>
4.1*	<u>Specimen Common Stock Certificate.</u>
4.2*	<u>Amended and Restated Investors' Rights Agreement among the Registrant and certain of its stockholders, effective as of August 13, 2021.</u>
5.1	<u>Opinion of Goodwin Procter LLP.</u>
10.1*#	<u>2020 Equity Incentive Plan and form of award agreement thereunder.</u>
10.2#	<u>2021 Stock Option and Incentive Plan and form of award agreements thereunder.</u>

Table of Contents

10.3#	<u>2021 Employee Stock Purchase Plan.</u>
10.4#	<u>Form of Indemnification Agreement between the Registrant and each of its directors and executive officers.</u>
10.5*#	<u>Senior Executive Cash Incentive Bonus Plan.</u>
10.6*#	<u>Form of Executive Employment Agreement.</u>
10.7*#	<u>Non-Employee Director Compensation Policy.</u>
10.8*#	<u>Transition Agreement, by and between the Registrant and Richard A. Fisher, dated November 17, 2021.</u>
10.9*†	<u>Exclusive License Agreement, by and between the Registrant and Amgen Inc., dated July 9, 2020.</u>
10.10*†	<u>Master Services Agreement, by and between the Registrant and Fujifilm Diosynth Biotechnologies UK Limited, Fujifilm Diosynth Biotechnologies Texas, LLC, Fujifilm Diosynth Biotechnologies U.S.A., Inc, and Fujifilm Diosynth Biotechnologies Denmark APS, dated February 24, 2021.</u>
10.11*	<u>Lease, by and between 100 Forge Holding LLC and the Registrant, dated as of September 20, 2021.</u>
10.12*	<u>Service Agreement and Space-Specific Amendment, by and between CIC Innovation Communities, LLC and the Registrant, dated as of October 13, 2021.</u>
21.1*	<u>Subsidiaries of the Registrant.</u>
23.1	<u>Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.</u>
23.2	<u>Consent of Goodwin Procter LLP (included in Exhibit 5.1).</u>
24*	<u>Power of Attorney (included on signature page).</u>

* Previously filed.

† Portions of this exhibit (indicated by asterisks) have been omitted pursuant to Item 601(b)(10) of Regulation S-K.

Indicates a management contract or any compensatory plan, contract or arrangement.

(b) Financial Statements Schedules

Schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the consolidated financial statements or notes thereto.

Item 17. Undertakings.

Inssofar as indemnification for liabilities arising under the Securities Act of 1933, as amended, or the Act, may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

The Registrant hereby undertakes that:

- (a) The Registrant will provide to the underwriter at the closing as specified in the underwriting agreement, certificates in such denominations and registered in such names as required by the underwriter to permit prompt delivery to each purchaser.
- (b) For purposes of determining any liability under the Securities Act of 1933, as amended, the information omitted from a form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in the form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act of 1933, as amended, shall be deemed to be part of this registration statement as of the time it was declared effective.
- (c) For the purpose of determining any liability under the Securities Act of 1933, as amended, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Cambridge, Massachusetts, on the 3rd day of January 2022.

VIGIL NEUROSCIENCE, INC.

By: /s/ Ivana Magovčević-Liebisch

Name: Ivana Magovčević-Liebisch, PhD, JD

Title: President and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement and Power of Attorney has been signed by the following person in the capacities and on the date indicated.

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Ivana Magovčević-Liebisch</u> Ivana Magočević-Liebisch , PhD, JD	President and Chief Executive Officer <i>(Principal Executive Officer)</i>	January 3, 2022
<u>/s/ Jennifer Ziolkowski</u> Jennifer Ziolkowski, CPA	Chief Financial Officer <i>(Principal Financial Officer and Principal Accounting Officer)</i>	January 3, 2022
<u>*</u> Bruce Booth, D.Phil	Director, Chairperson	January 3, 2022
<u>*</u> Cheryl Renee Blanchard, PhD	Director	January 3, 2022
<u>*</u> Shaan Gandhi, MD, PhD, MBA	Director	January 3, 2022
<u>*</u> Gerhard Koenig, PhD	Director	January 3, 2022
<u>*</u> Clay Bernardin Thorp	Director	January 3, 2022
<u>*</u> Stefan Vitorovic, MS, MBA	Director	January 3, 2022

*By: /s/ Ivana Magočević-Liebisch
Ivana Magočević-Liebisch
Attorney-in-Fact

Morgan Stanley & Co. LLC
Jefferies LLC

c/o Morgan Stanley & Co. LLC
1585 Broadway
New York, New York 10036

c/o Jefferies LLC
820 Madison Avenue
New York, New York 10022

As Representatives of the several Underwriters
listed in Schedule I to the Underwriting Agreement
referred to below

Ladies and Gentlemen:

Vigil Neuroscience, Inc., a Delaware corporation (the “**Company**”), proposes to issue and sell to the several Underwriters named in Schedule I hereto (the “**Underwriters**”) [•] shares of its common stock, par value \$0.0001 per share (the “**Firm Shares**”). The Company also proposes to issue and sell to the several Underwriters not more than an additional [•] shares of its common stock, par value \$0.0001 per share (the “**Additional Shares**”) if and to the extent that Morgan Stanley & Co. LLC (“**Morgan Stanley**”) and Jefferies LLC, as representatives of the several Underwriters (the “**Representatives**”), shall have determined to exercise, on behalf of the Underwriters, the right to purchase such shares of common stock granted to the Underwriters in Section 2 hereof. The Firm Shares and the Additional Shares are hereinafter collectively referred to as the “**Shares**.” The shares of common stock, par value \$0.0001 per share of the Company to be outstanding after giving effect to the sales contemplated hereby are hereinafter referred to as the “**Common Stock**.”

The Company has filed with the Securities and Exchange Commission (the “**Commission**”) a registration statement on Form S-1 (File No. 333-261230), including a preliminary prospectus, relating to the Shares. The registration statement as amended at the time it becomes effective, including the information (if any) deemed to be part of the registration statement at the time of effectiveness pursuant to Rule 430A under the Securities Act of 1933, as amended (the “**Securities Act**”), is hereinafter referred to as the “**Registration Statement**”; the prospectus in the form first used to confirm sales of Shares (or in the form first made available to the Underwriters by the Company to meet requests of purchasers pursuant to Rule 173 under the Securities Act) is hereinafter referred to as the “**Prospectus**.” If the Company has filed an abbreviated registration statement to register additional shares of Common Stock pursuant to Rule 462(b) under the Securities Act (a “**Rule 462 Registration Statement**”), then any reference herein to the term “**Registration Statement**” shall be deemed to include such Rule 462 Registration Statement.

For purposes of this Agreement, “**free writing prospectus**” has the meaning set forth in Rule 405 under the Securities Act, “**preliminary prospectus**” shall mean each prospectus used prior to the effectiveness of the Registration Statement, and each prospectus that omitted information pursuant to Rule 430A under the Securities Act that was used after such effectiveness and prior to the execution and delivery of this Agreement, “**Time of Sale Prospectus**” means the preliminary prospectus contained in the Registration Statement at the time of its effectiveness together with the documents and pricing information set forth in Schedule II hereto, and “**broadly available road show**” means a “bona fide electronic road show” as defined in Rule 433(h)(5) under the Securities Act that has been made available without restriction to any person. As used herein, the terms “Registration Statement,” “preliminary prospectus,” “Time of Sale Prospectus” and “Prospectus” shall include the documents, if any, incorporated by reference therein as of the date hereof.

Morgan Stanley has agreed to reserve a portion of the Shares to be purchased by it under this Agreement for sale to the Company’s directors, officers, employees and business associates and other parties related to the Company (collectively, “**Participants**”), as set forth in each of the Time of Sale Prospectus and the Prospectus under the heading “Underwriters” (the “**Directed Share Program**”). The Shares to be sold by Morgan Stanley and its affiliates pursuant to the Directed Share Program, at the direction of the Company, are referred to hereinafter as the “**Directed Shares**”. Any Directed Shares not orally confirmed for purchase by any Participant by the end of the business day on which this Agreement is executed will be offered to the public by the Underwriters as set forth in the Prospectus.

1. *Representations and Warranties.* The Company represents and warrants to and agrees with each of the Underwriters that:
 - (a) The Registration Statement has become effective; no stop order suspending the effectiveness of the Registration Statement is in effect, and no proceedings for such purpose or pursuant to Section 8A under the Securities Act are pending before or, to the Company’s knowledge, threatened by the Commission.
 - (b) (i) The Registration Statement, when it became effective, did not contain and, as amended or supplemented, if applicable, as of the date of such amendment or supplement, will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading, (ii) the Registration Statement and the Prospectus comply and, as amended or supplemented, if applicable, as of the date of such amendment or supplement, will comply in all material respects with the Securities Act and the applicable rules and regulations of the Commission thereunder, (iii) the Time of Sale Prospectus does not, and at the time of each sale of the Shares in connection with the offering when the Prospectus is not yet available to prospective purchasers and at the Closing Date (as defined in Section 4), the Time of Sale Prospectus, as then amended or supplemented by the

Company, if applicable, as of the date of such amendment or supplement, will not, contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading, (iv) each broadly available road show, if any, when considered together with the Time of Sale Prospectus, does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading and (v) the Prospectus, as of its date, does not contain and, as amended or supplemented, if applicable, as of the date of such amendment or supplement, will not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading, except that the representations and warranties set forth in this paragraph do not apply to statements or omissions in the Registration Statement, the Time of Sale Prospectus or the Prospectus based upon information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representatives expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the Underwriter Information (as defined in Section 9(b) of this Agreement).

- (c) The Company is not an “ineligible issuer” in connection with the offering pursuant to Rules 164, 405 and 433 under the Securities Act. Any free writing prospectus that the Company is required to file pursuant to Rule 433(d) under the Securities Act has been, or will be, filed with the Commission in accordance with the requirements of the Securities Act and the applicable rules and regulations of the Commission thereunder. Each free writing prospectus that the Company has filed, or is required to file, pursuant to Rule 433(d) under the Securities Act or that was prepared by or on behalf of or used or referred to by the Company complies or will comply, as of the date of such filing, in all material respects with the applicable requirements of the Securities Act and the applicable rules and regulations of the Commission thereunder. Except for the free writing prospectuses, if any, identified in Schedule II hereto, and electronic road shows, if any, each furnished to the Representatives before first use, the Company has not prepared, used or referred to, and will not, without the prior consent of the Representatives, prepare, use or refer to, any free writing prospectus.
- (d) The Company has been duly incorporated, is validly existing as a corporation in good standing under the laws of the state of Delaware, has the corporate power and authority to own or lease its property and to conduct its business as described in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus and is duly qualified to transact business and is in good standing in each jurisdiction in which the conduct of its business or its ownership or leasing of property requires such qualification, except to the extent that the failure to be so qualified or be in good standing would not, singly or in the aggregate, reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole.

- (e) Each subsidiary of the Company has been duly incorporated, organized or formed, is validly existing as a corporation or other business entity in good standing under the laws of the jurisdiction of its incorporation, organization or formation, has the corporate or other business entity power and authority to own or lease its property and to conduct its business as described in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus and is duly qualified to transact business and is in good standing in each jurisdiction in which the conduct of its business or its ownership or leasing of property requires such qualification, except to the extent that the failure to be so qualified or be in good standing would not, singly or in the aggregate, reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole; all of the issued shares of capital stock or other equity interests of each subsidiary of the Company have been duly and validly authorized and issued, are fully paid and non-assessable and are owned directly or indirectly by the Company, free and clear of all liens, encumbrances, equities or claims.
- (f) This Agreement has been duly authorized, executed and delivered by the Company.
- (g) The authorized capital stock of the Company conforms as to legal matters, in all material respects, to the description thereof contained in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus.
- (h) The shares of Common Stock outstanding prior to the issuance of the Shares have been duly authorized and are validly issued, fully paid and non-assessable.
- (i) The Shares have been duly authorized and, when issued, delivered and paid for in accordance with the terms of this Agreement, will be validly issued, fully paid and non-assessable, and the issuance of the Shares will not be subject to any preemptive or similar rights that have not been validly waived.
- (j) The execution and delivery by the Company of, and the performance by the Company of its obligations under, this Agreement will not contravene any provision of (i) applicable law, (ii) the certificate of incorporation or by-laws of the Company, (iii) any agreement or other instrument binding upon the Company or any of its subsidiaries that is material to the Company and its subsidiaries, taken as a whole, or (iv) any judgment, order or decree of any governmental body, agency or court having jurisdiction over the Company or any subsidiary, except that, in the case of clause (i) and (iii), such contravention would not, singly or in the aggregate, reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole, and no consent, approval, authorization or order of, or qualification with, any governmental body, agency or court is required for the performance by the Company of its obligations under this Agreement, except such as may be required by the securities or Blue Sky laws of the various states in connection with the offer and sale of the Shares.
- (k) There has not occurred any material adverse change, or any development involving a prospective material adverse change, in the condition, financial or otherwise, or in the earnings, business or operations of the Company and its subsidiaries, taken as a whole, from that set forth in the Time of Sale Prospectus.

- (l) There are no legal or governmental proceedings pending or, to the Company's knowledge, threatened to which the Company or any of its subsidiaries is a party or to which any of the properties of the Company or any of its subsidiaries is subject (i) other than proceedings accurately described in all material respects in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus and proceedings that would not, singly or in the aggregate, reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole, or on the power or ability of the Company to perform its obligations under this Agreement or to consummate the transactions contemplated by each of the Registration Statement, the Time of Sale Prospectus and the Prospectus or (ii) that are required to be described in the Registration Statement, the Time of Sale Prospectus or the Prospectus and are not so described; and there are no statutes, regulations, contracts or other documents that are required to be described in the Registration Statement, the Time of Sale Prospectus or the Prospectus or to be filed as exhibits to the Registration Statement that are not described in all material respects or filed as required.
- (m) Each preliminary prospectus filed as part of the Registration Statement as originally filed or as part of any amendment thereto, or filed pursuant to Rule 424 under the Securities Act, complied when so filed in all material respects with the applicable requirements of the Securities Act and the applicable rules and regulations of the Commission thereunder.
- (n) The Company is not, and after giving effect to the offering and sale of the Shares and the application of the proceeds thereof as described in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus will not be, required to register as an "investment company" as such term is defined in the Investment Company Act of 1940, as amended.
- (o) The Company and each of its subsidiaries (i) are in compliance with any and all applicable foreign, federal, state and local laws and regulations relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants ("**Environmental Laws**"), (ii) have received all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses and (iii) are in compliance with all terms and conditions of any such permit, license or approval, except where such noncompliance with Environmental Laws, failure to receive required permits, licenses or other approvals or failure to comply with the terms and conditions of such permits, licenses or approvals would not, singly or in the aggregate, reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole.
- (p) There are no costs or liabilities associated with Environmental Laws (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws or any permit, license or approval, any related constraints on operating activities and any potential liabilities to third parties) which would, singly or in the aggregate, reasonably be expected have a material adverse effect on the Company and its subsidiaries, taken as a whole.

- (q) There are no contracts, agreements or understandings between the Company and any person granting such person the right to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company or to require the Company to include such securities with the Shares registered pursuant to the Registration Statement, except as otherwise have been validly waived in connection with the issuance and sale of Shares contemplated hereby and as described in the Time of Sale Prospectus and Prospectus.
- (r) (i) None of the Company or any of its subsidiaries or affiliates, or any director, officer, or employee thereof, or, to the Company's knowledge, any agent or representative of the Company or of any of its subsidiaries or affiliates, has taken or will take any action in furtherance of an offer, payment, promise to pay, or authorization or approval of the payment, giving or receipt of money, property, gifts or anything else of value, directly or indirectly, to any government official (including any officer or employee of a government or government-owned or controlled entity or of a public international organization, or any person acting in an official capacity for or on behalf of any of the foregoing, or any political party or party official or candidate for political office) ("**Government Official**") in order to influence official action, or to any person in violation of any applicable anti-corruption laws; (ii) the Company and each of its subsidiaries and affiliates have conducted their businesses in compliance with applicable anti-corruption laws and have instituted and maintained and will continue to maintain policies and procedures reasonably designed to promote and achieve compliance with such laws and with the representations and warranties contained herein; and (iii) neither the Company nor any of its subsidiaries will use, directly or indirectly, the proceeds of the offering in furtherance of an offer, payment, promise to pay, or authorization of the payment or giving of money, or anything else of value, to any person in violation of any applicable anti-corruption laws.
- (s) The operations of the Company and each of its subsidiaries are and have been conducted at all times in material compliance with all applicable financial recordkeeping and reporting requirements, including those of the Bank Secrecy Act, as amended by Title III of the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 (USA PATRIOT Act), and the applicable anti-money laundering statutes of jurisdictions where the Company and each of its subsidiaries conduct business, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the "**Anti-Money Laundering Laws**"), and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Anti-Money Laundering Laws is pending or, to the best knowledge of the Company, threatened.
- (t) (i) None of the Company, any of its subsidiaries, or any director, officer, or employee thereof, or, to the Company's knowledge, any agent, affiliate or representative of the Company or any of its subsidiaries, is an individual or entity ("**Person**") that is, or is owned or controlled by one or more Persons that are:

- (A) the subject of any sanctions administered or enforced by the U.S. Department of the Treasury's Office of Foreign Assets Control, the United Nations Security Council, the European Union, Her Majesty's Treasury, or other relevant sanctions authority (collectively, "Sanctions"), or
 - (B) located, organized or resident in a country or territory that is the subject of Sanctions (including, without limitation, Crimea, Cuba, Iran, North Korea and Syria).
- (ii) The Company will not, directly or indirectly, use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other Person:
- (A) to fund or facilitate any activities or business of or with any Person or in any country or territory that, at the time of such funding or facilitation, is the subject of Sanctions; or
 - (B) in any other manner that will result in a violation of Sanctions by any Person (including any Person participating in the offering, whether as underwriter, advisor, investor or otherwise).
- (iii) The Company and each of its subsidiaries have not knowingly engaged in, are not now knowingly engaged in, and will not engage in, any dealings or transactions with any Person, or in any country or territory, that at the time of the dealing or transaction is or was the subject of Sanctions.
- (u) Subsequent to the respective dates as of which information is given in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus, (i) the Company and its subsidiaries, taken as a whole, have not incurred any material liability or obligation, direct or contingent, nor entered into any material transaction; (ii) the Company has not purchased any of its outstanding capital stock, nor declared, paid or otherwise made any dividend or distribution of any kind on its capital stock other than ordinary and customary dividends; and (iii) there has not been any material change in the capital stock, short-term debt or long-term debt of the Company and its subsidiaries, taken as a whole.
- (v) The Company and each of its subsidiaries have good and marketable title in fee simple to all real property and good and marketable title to all personal property owned by them which is material to the business of the Company and its subsidiaries, in each case free and clear of all liens, encumbrances and defects except such as do not materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company and its subsidiaries; and any real property and buildings held under lease by the Company and its subsidiaries are held by them under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company and its subsidiaries.

(w) The Company owns or has obtained valid and enforceable licenses for the inventions, patents, patent applications, trademarks, trade names, service names, copyrights, know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information) and other intellectual property described in the Time of Sale Prospectus and the Prospectus as being owned or licensed by it or which are necessary for the conduct of its business as currently conducted or as currently proposed to be conducted (with respect to the development and commercialization of the product candidates described in the Time of Sale Prospectus and the Prospectus, except where the failure to own or license such rights would not, individually or in the aggregate, have a material adverse effect) (collectively, “**Intellectual Property**”), and to the Company’s knowledge the conduct of its business does not infringe, misappropriate or otherwise conflict in any material respect with any such rights of others. The Intellectual Property of the Company is subsisting, free and clear of all material liens and encumbrances, and has not been adjudged by a court of competent jurisdiction to be invalid or unenforceable, in whole or in part and the Company is unaware of any facts which would form a reasonable basis for any such adjudication. To the Company’s knowledge, there are no third parties who have rights to any Intellectual Property, except for any customary reversionary rights of third-party licensors with respect to Intellectual Property that is disclosed in the Time of Sale Prospectus and the Prospectus as licensed to the Company; and, to the Company’s knowledge, there is no infringement by third parties of any Intellectual Property. Other than as disclosed in the Time of Sale Prospectus and the Prospectus, the Company is not obligated to pay any royalty, grant a license or provide other consideration to any third party in connection with the Intellectual Property or in connection with the manufacture, use or sale of any of the Company’s product candidates. There is no pending or threatened action, suit, proceeding or claim by others: (A) challenging the Company’s rights in or to any Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; (B) challenging the validity, enforceability or scope of any Intellectual Property, and except as described in the Time of Sale Prospectus and the Prospectus, the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; or (C) asserting that the Company infringes, misappropriates, or otherwise violates, or would, upon the commercialization of any product or service described in the Time of Sale Prospectus or the Prospectus as under development, infringe, misappropriate or violate, any patent, trademark, trade name, service name, copyright, trade secret or other proprietary rights of others, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; in each case of (A) –(C) which could be expected, individually or in the aggregate, to have a material adverse effect. The Company has complied in all material respects with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company, and all such agreements are in full force and effect. To the Company’s knowledge, there are no defects in any of the patents or patent applications included in the Intellectual Property that are material to the Company. The Company has taken commercially reasonable steps to protect, maintain and safeguard its Intellectual Property, including the execution of appropriate nondisclosure, confidentiality agreements and invention assignment agreements and invention assignments with its employees or consultants, and, to the Company’s knowledge, no employee of the Company or consultant is in or has been in violation of any material term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement,

nondisclosure agreement, or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company. The duty of candor and good faith as required by the United States Patent and Trademark Office during the prosecution of the United States patents and patent applications included in the Intellectual Property have been complied with; and in all foreign offices having similar requirements, all such requirements have been complied with. The product candidates described in the Time of Sale Prospectus and the Prospectus as under development by the Company fall within the scope of the claims of one or more patents or pending patent applications owned by, or exclusively licensed to, the Company.

- (x) (i) The Company and its subsidiaries use and have used any and all software and other materials distributed under a "free," "open source," or similar licensing model (including but not limited to the MIT License, Apache License, GNU General Public License, GNU Lesser General Public License and GNU Affero General Public License) ("Open Source Software") in compliance with all license terms applicable to such Open Source Software; and (ii) neither the Company nor any of its subsidiaries uses or distributes or has used or distributed any Open Source Software in any manner that requires or has required (A) the Company or any of its subsidiaries to permit reverse engineering of any software code or other technology owned by the Company or any of its subsidiaries or (B) any software code or other technology owned by the Company or any of its subsidiaries to be (1) disclosed or distributed in source code form, (2) licensed for the purpose of making derivative works or (3) redistributed at no charge.
- (y) Since its inception, (i) the Company and each of its subsidiaries have complied and are presently in compliance in material respects with all internal and externally published privacy policies, contractual obligations, applicable laws, statutes, judgments, orders, rules and regulations of any court or arbitrator or other governmental or regulatory authority and any other legal obligations, in each case, relating to the collection, use, transfer, import, export, storage, protection, disposal and disclosure by the Company or any of its subsidiaries of any personally identifiable information ("**Data Security Obligations**", and such data, "**Data**"), (ii) the Company has not received any written notification, or, to the Company's knowledge, any oral notification, of or complaint regarding non-compliance with any Data Security Obligation; and (iii) there is no action, suit or proceeding by or before any court or governmental agency, authority or body pending or, to the Company's knowledge, threatened, alleging non-compliance with any Data Security Obligation.
- (z) The Company and each of its subsidiaries have taken all reasonable technical and organizational measures designed to protect the information technology systems and Data used in connection with the operation of the Company's and its subsidiaries' businesses. Without limiting the foregoing, the Company and its subsidiaries have used reasonable efforts to establish and maintain, and have established, maintained, implemented and complied with, reasonable information technology, information security, cyber security and data protection controls, policies and procedures, including oversight, access controls, encryption, technological and physical safeguards and business continuity/disaster recovery and security plans that are designed to protect against and prevent breach, destruction, loss, unauthorized distribution, use, access, disablement,

misappropriation or modification, or other compromise or misuse of or relating to any information technology system or Data used in connection with the operation of the Company's and its subsidiaries' businesses ("**Breach**"). To the Company's knowledge, there has been no such Breach, and the Company and its subsidiaries have no knowledge of any event or condition that would reasonably be expected to result in, any such Breach.

- (aa) No material labor dispute with the employees of the Company or any of its subsidiaries exists, or, to the knowledge of the Company, is imminent; and the Company is not aware of any existing, threatened or imminent labor disturbance by the employees of any of its principal suppliers, manufacturers or contractors that could, singly or in the aggregate, have a material adverse effect on the Company and its subsidiaries, taken as a whole.
- (bb) The Company and each of its subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as in the Company's reasonable judgment are prudent and customary in the businesses in which they are engaged; neither the Company nor any of its subsidiaries has been refused any insurance coverage sought or applied for; and neither the Company nor any of its subsidiaries has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not, singly or in the aggregate, reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole.
- (cc) The Company and each of its subsidiaries possess, and are in material compliance with the terms of, all applications, certificates, approvals, registrations, licenses, authorizations and permits issued by the appropriate federal, state or foreign regulatory authorities necessary to conduct their respective businesses (collectively, "**Permits**"). All Permits are in full force and effect and neither the Company nor any of its subsidiaries is in violation of any term of any Permit in any material respect. Each of the Company and its subsidiaries has fulfilled and performed all of its respective obligations with respect to the Permits in all material respects and, to the knowledge of the Company, no event has occurred which allows, or after notice or lapse of time would allow, revocation or termination thereof or results in any other impairment of the rights of the holder of any Permit. Neither the Company nor any of its subsidiaries has received any written notice, or, to the Company's knowledge, any oral notice, of proceedings relating to the revocation or modification of any such certificate, authorization or permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would reasonably be expected to have a material adverse effect on the Company and its subsidiaries, taken as a whole.
- (dd) The financial statements included in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus, together with the related schedules and notes thereto, comply as to form in all material respects with the applicable accounting requirements of the Securities Act and present fairly in all material respects the consolidated financial position of the Company and its subsidiaries as of the dates shown and its results of operations and cash flows for the periods shown, and such financial statements have been

prepared in conformity with generally accepted accounting principles in the United States (“U.S. GAAP”) applied on a consistent basis throughout the periods covered thereby except for any normal year-end adjustments in the Company’s quarterly financial statements. The other financial information included in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus has been derived from the accounting records of the Company and its consolidated subsidiaries and presents fairly in all material respects the information shown thereby. The statistical, industry-related and market-related data included in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus are based on or derived from sources which the Company reasonably and in good faith believes are reliable and accurate and such data is consistent with the sources from which they are derived, in each case in all material respects.

- (ee) PriceWaterhouseCoopers LLP, who have certified certain financial statements of the Company and its subsidiaries and delivered its report with respect to the audited consolidated financial statements and schedules filed with the Commission as part of the Registration Statement and included in each of the Registration Statement, the Time of Sale Prospectus and the Prospectus, is an independent registered public accounting firm with respect to the Company within the meaning of the Securities Act and the applicable rules and regulations thereunder adopted by the Commission and the Public Company Accounting Oversight Board (United States).
- (ff) The Company and each of its subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management’s general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with U.S. GAAP and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management’s general or specific authorization; and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Since the end of the Company’s most recent audited fiscal year, there has been (i) except as disclosed, no material weakness in the Company’s internal control over financial reporting (whether or not remediated), and (ii) no change in the Company’s internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting.
- (gg) Except as described in the Time of Sale Prospectus, the Company has not sold, issued or distributed any shares of Common Stock during the six-month period preceding the date hereof, including any sales pursuant to Rule 144A under, or Regulation D or S of, the Securities Act, other than shares issued pursuant to employee benefit plans, qualified stock option plans or other employee compensation plans or pursuant to outstanding options, rights or warrants.
- (hh) Neither the Company nor any of its subsidiaries, nor any affiliate has any securities rated by any “nationally recognized statistical rating organization,” as such term is defined in Section 3(a)(62) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”).

- (ii) The Registration Statement, the Prospectus, the Time of Sale Prospectus and any preliminary prospectus comply, and any amendments or supplements thereto will comply, with any applicable laws or regulations of foreign jurisdictions in which the Prospectus, the Time of Sale Prospectus or any preliminary prospectus, as amended or supplemented, if applicable, are distributed in connection with the Directed Share Program.
- (jj) No consent, approval, authorization or order of, or qualification with, any governmental body or agency, other than those obtained, is required in connection with the offering of the Directed Shares in any jurisdiction where the Directed Shares are being offered.
- (kk) The Company has not offered, or caused Morgan Stanley or any Morgan Stanley Entity as defined in Section 9 to offer, Shares to any person pursuant to the Directed Share Program with the specific intent to unlawfully influence (i) a customer or supplier of the Company to alter the customer's or supplier's level or type of business with the Company, or (ii) a trade journalist or publication to write or publish favorable information about the Company or its products.
- (ll) Other than the direct and indirect subsidiaries of the Company listed in Exhibit 21.1 of the Registration Statement, the Company, directly or indirectly, owns no capital stock or other equity or ownership or proprietary interest in any corporation, partnership, association, trust or other entity. As used in this Agreement with respect to the Company, "subsidiaries" shall mean direct and indirect subsidiaries of the Company.
- (mm) The Company and each of its subsidiaries have filed all U.S. federal, state, local and non-U.S. tax returns required to be filed through the date of this Agreement or have requested extensions thereof (except where the failure to file would not, singly or in the aggregate, have a material adverse effect on the Company and its subsidiaries, taken as a whole) and have paid all taxes required to be paid thereon (except for cases in which the failure to file or pay would not, singly or in the aggregate, have a material adverse effect on the Company and its subsidiaries, taken as a whole, or, except as currently being contested in good faith and for which reserves required by U.S. GAAP have been created in the financial statements of the Company), and no tax deficiency has been determined adversely to the Company or any of its subsidiaries which, singly or in the aggregate, has had (nor does the Company nor any of its subsidiaries have any notice or knowledge of any tax deficiency which could reasonably be expected to be determined adversely to the Company or its subsidiaries and which could reasonably be expected to have) a material adverse effect on the Company and its subsidiaries, taken as a whole.
- (nn) [Reserved]
- (oo) From the time of initial confidential submission of the Registration Statement to the Commission (or, if earlier, the first date on which the Company engaged directly or through any person authorized to act on its behalf in any Testing-the-Waters Communication) through the date hereof, the Company has been and is an "emerging growth company," as defined in Section 2(a) of the Securities Act (an "**Emerging Growth Company**"). "**Testing-the-Waters Communication**" means any communication with potential investors undertaken in reliance on Section 5(d) or Rule 163B of the Securities Act.

- (pp) The Company (i) has not alone engaged in any Testing-the-Waters Communication with any person other than Testing-the-Waters Communications with the consent of the Representatives with entities that are reasonably believed to be qualified institutional buyers within the meaning of Rule 144A under the Securities Act or institutions that are reasonably believed to be accredited investors within the meaning of Rule 501 under the Securities Act and (ii) has not authorized anyone other than the Representatives to engage in Testing-the-Waters Communications. The Company reconfirms that the Representatives have been authorized to act on its behalf in undertaking Testing-the-Waters Communications. The Company has not distributed any Written Testing-the-Waters Communication. "Written Testing-the-Waters Communication" means any Testing-the-Waters Communication that is a written communication within the meaning of Rule 405 under the Securities Act.
- (qq) As of the time of each sale of the Shares in connection with the offering when the Prospectus is not yet available to prospective purchasers, none of (A) the Time of Sale Prospectus, (B) any free writing prospectus, when considered together with the Time of Sale Prospectus, and (C) any individual Testing-the-Waters Communication, when considered together with the Time of Sale Prospectus, included, includes or will include an untrue statement of a material fact or omitted, omits or will omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.
- (rr) The Company is and at all times has been in compliance with all statutes, rules, regulations and policies applicable to the ownership or lease of its properties.
- (ss) The Company (i) is and has, since its inception, been in material compliance with all statutes, rules, regulations and policies applicable to the conduct of its business, including, but not limited to, the ownership, research, testing, development, registration, licensure, application approval, manufacture, packaging, labeling, processing, use, distribution, marketing, advertising, promotion, sale, offer for sale, recordkeeping, filing of reports, storage, import, export or disposal of any product candidate under development by the Company, including, without limitation, Title XVIII of the Social Securities Act, 42 U.S.C. §§ 1395-1395hhh; Title XIX of the Social Security Act, 42 U.S.C. §§ 1396-1396v; the Federal Anti-Kickback Statute, 42 U.S.C. § 1320a-7b(b); the civil False Claims Act, 31 U.S.C. §§ 3729 et seq.; the criminal False Claims Act, 42 U.S.C. § 1320a-7b(a); any criminal laws relating to health care fraud and abuse, including but not limited to 18 U.S.C. §§ 286 and 287 and the health care fraud criminal provisions under the Health Insurance Portability and Accountability Act of 1996, 42 U.S.C. §§ 1320d et seq.; the Civil Monetary Penalties Law, 42 U.S.C. § 1320a-7a; the Federal Food, Drug, and Cosmetic Act ("FDCA"), 21 U.S.C. §§ 301 et seq.; the Public Health Service Act, 42 U.S.C. §§ 201 et seq.; the Patient Protection and Affordable Care Act of 2010 (Pub. Law 111-148), as amended by the Health Care and Education Reconciliation Act of 2010 (Pub. Law 111-152); and any similar foreign, federal, state and local laws and regulations relating to the same (collectively, the "**Regulatory**

Laws"); (ii) has not received any U.S. Food and Drug Administration ("**FDA**") Form 483, notice of adverse finding, warning letter, untitled letter or other communication or notice from FDA or similar foreign, state and local governmental or regulatory authorities (collectively, the "**Regulatory Authorities**"), alleging or asserting non-compliance with any Regulatory Laws or any licenses, exemptions, certificates, approvals, consents, clearances, authorizations, permits, registrations and supplements or amendments thereto required by any such Regulatory Laws or Regulatory Authorities ("**Regulatory Authorizations**"); (iii) has not received any written notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any Regulatory Authority or any court or arbitrator or governmental authority or third party alleging or asserting non-compliance with any Regulatory Laws or Regulatory Authorizations, nor, to the knowledge of the Company, is any such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action or communication being considered or threatened; (iv) possesses all material Regulatory Authorizations, and such Regulatory Authorizations are valid and in full force and effect and is not in violation of any material term of any such Regulatory Authorizations; (v) has not received written notice that any Regulatory Authority or court or arbitrator or governmental authority has taken, is taking or intends to take action to materially limit, suspend, materially modify or revoke any Regulatory Authorizations nor, to the knowledge of the Company, is any such limitation, suspension, modification or revocation threatened; (vi) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Regulatory Laws or Regulatory Authorizations and all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and accurate on the date filed in all material respects (or were corrected or supplemented by a subsequent submission); and (vii) is not a party to any corporate integrity agreements, deferred prosecution or non-prosecution agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or Regulatory Authority.

- (tt) (i) The preclinical studies and clinical trials conducted by or on behalf of or sponsored by the Company, or in which the Company has participated, with respect to the Company's product candidates, including any studies and trials that are described in the Time of Sale Prospectus and the Prospectus, or the results of which are referred to in the Time of Sale Prospectus or the Prospectus, or are intended to be submitted to the **Regulatory Authorities** (collectively, "**Company Trials**"), were and, if ongoing, are being, conducted in all material respects in accordance with the protocols, procedures, and controls established for each such Company Trial, standard medical and scientific research procedures, and with all Regulatory Laws including, without limitation, the FDCA and its implementing regulations at 21 C.F.R. Parts 50, 54, 56, 58, and 312; (ii) the descriptions in the Time of Sale Prospectus and the Prospectus of the results of the Company Trials are accurate and complete in all material respects and fairly present the data derived from such Company Trials; (iii) the Company has no knowledge of any other trials the results of which are inconsistent with or otherwise could reasonably be expected to discredit or call into question the results described or referred to in the Time of Sale Prospectus or the Prospectus; (iv) the Company has not received any notices,

correspondence or other communication from any Regulatory Authority or any other governmental agency or any institutional review board or ethics committee, or other similar entity, which could lead to the termination, suspension, material modification or partial or full clinical hold of any Company Trial and, to the knowledge of the Company, there are no reasonable grounds for the same; (v) no investigational new drug application or comparable submission filed by or on behalf of the Company with the FDA has been terminated or suspended by the FDA or any other Regulatory Authority; (vi) the Company has obtained (or caused to be obtained) informed consent by or on behalf of each human subject who participated in a Company Trial; and (vii) in using or disclosing patient information received by the Company in connection with a Company Trial, the Company has complied in all material respects with all applicable laws and regulatory rules or requirements, including, without limitation, HIPAA and the rules and regulations thereunder.

- (uu) Neither the Company nor, to the knowledge of the Company, any of its officers, directors or managing employees (as defined in 42 U.S.C. § 1320a-5(b)), is or has been excluded, suspended or debarred from participation in any national or regional health care program, debarred by Regulatory Authorities pursuant to 21 U.S.C. § 335a or similar laws, or made subject to any pending or, to the knowledge of the Company, threatened or contemplated action or engaged in any conduct which could reasonably be expected to result in such exclusion, suspension or debarment.
- (vv) To the knowledge of the Company, the manufacturing facilities and operations of its suppliers are operated in compliance in all material respects with all Regulatory Laws.
- (ww) None of the Company's product candidates has received marketing approval from any Regulatory Authority.

2. *Agreements to Sell and Purchase.* The Company hereby agrees to sell to the several Underwriters, and each Underwriter, upon the basis of the representations and warranties herein contained, but subject to the terms and conditions hereinafter stated, agrees, severally and not jointly, to purchase from the Company the respective numbers of Firm Shares set forth in Schedule I hereto opposite its name at \$[•] a share (the "**Purchase Price**").

On the basis of the representations and warranties contained in this Agreement, and subject to its terms and conditions, the Company agrees to sell to the Underwriters the Additional Shares, and the Underwriters shall have the right to purchase, severally and not jointly, up to [•] Additional Shares at the Purchase Price, provided, however, that the amount paid by the Underwriters for any Additional Shares shall be reduced by an amount per share equal to any dividends declared by the Company and payable on the Firm Shares but not payable on such Additional Shares. The Representatives may exercise this right on behalf of the Underwriters in whole or from time to time in part by giving written notice not later than 30 days after the date of this Agreement. Any exercise notice shall specify the number of Additional Shares to be purchased by the Underwriters and the date on which such shares are to be purchased. Each purchase date must be at least one business day after the written notice is given and may not be earlier

than the closing date for the Firm Shares or later than ten business days after the date of such notice. Additional Shares may be purchased as provided in Section 4 hereof solely for the purpose of covering over-allotments made in connection with the offering of the Firm Shares. On each day, if any, that Additional Shares are to be purchased (an “**Option Closing Date**”), each Underwriter agrees, severally and not jointly, to purchase the number of Additional Shares (subject to such adjustments to eliminate fractional shares as the Representatives may determine) that bears the same proportion to the total number of Additional Shares to be purchased on such Option Closing Date as the number of Firm Shares set forth in Schedule I hereto opposite the name of such Underwriter bears to the total number of Firm Shares.

3. *Terms of Public Offering.* The Company is advised by the Representatives that the Underwriters propose to make a public offering of their respective portions of the Shares as soon after the Registration Statement and this Agreement have become effective as in Morgan Stanley’s judgment is advisable. The Company is further advised by the Representatives that the Shares are to be offered to the public initially at \$[•] a share (the “**Public Offering Price**”) and to certain dealers selected by the Representatives at a price that represents a concession not in excess of \$[•] a share under the Public Offering Price.
4. *Payment and Delivery.* Payment for the Firm Shares shall be made to the Company in Federal or other funds immediately available in New York City against delivery of such Firm Shares for the respective accounts of the several Underwriters at 10:00 a.m., New York City time, on [•], 2022, or at such other time on the same or such other date, not later than [•], 2022,¹ as shall be designated in writing by the Representatives. The time and date of such payment are hereinafter referred to as the “**Closing Date.**”

Payment for any Additional Shares shall be made to the Company in Federal or other funds immediately available in New York City against delivery of such Additional Shares for the respective accounts of the several Underwriters at 10:00 a.m., New York City time, on the date specified in the corresponding notice described in Section 2 or at such other time on the same or on such other date, in any event not later than [•], 2022,² as shall be designated in writing by the Representatives.

The Firm Shares and Additional Shares shall be registered in such names and in such denominations as the Representatives shall request in writing not later than one full business day prior to the Closing Date or the applicable Option Closing Date, as the case may be. The Firm Shares and Additional Shares shall be delivered to the Representatives on the Closing Date or an Option Closing Date, as the case may be, for the respective accounts of the several Underwriters, with any transfer taxes payable in connection with the transfer of the Shares to the Underwriters duly paid, against payment of the Purchase Price therefor.

¹ NTD: 5 business days after Closing Date.

² NTD: 10 business days after the expiration of the green shoe option.

5. *Conditions to the Underwriters' Obligations.* The obligations of the Company to sell the Shares to the Underwriters and the several obligations of the Underwriters to purchase and pay for the Shares on the Closing Date are subject to the condition that the Registration Statement shall have become effective not later than [•][a.m./p.m.] (New York City time) on the date hereof.

The several obligations of the Underwriters are subject to the following further conditions:

- (a) Subsequent to the execution and delivery of this Agreement and prior to the Closing Date:
- (i) no order suspending the effectiveness of the Registration Statement shall be in effect, and no proceeding for such purpose or pursuant to Section 8A under the Securities Act shall be pending before or threatened by the Commission; and
- (ii) there shall not have occurred any change, or any development involving a prospective change, in the condition, financial or otherwise, or in the earnings, business or operations of the Company and its subsidiaries, taken as a whole, from that set forth in the Time of Sale Prospectus that, in the judgment of the Representatives, is material and adverse and that makes it, in the judgment of the Representatives, impracticable to market the Shares on the terms and in the manner contemplated in the Time of Sale Prospectus.
- (b) The Underwriters shall have received on the Closing Date a certificate, dated the Closing Date and signed by an executive officer of the Company, to the effect set forth in Sections 5(a)(i) and 5(a)(ii) above and to the effect that the representations and warranties of the Company contained in this Agreement are true and correct as of the Closing Date and that the Company has complied with all of the agreements and satisfied all of the conditions on its part to be performed or satisfied hereunder on or before the Closing Date.

The officer signing and delivering such certificate may rely upon the best of his or her knowledge as to proceedings threatened.

- (c) The Underwriters shall have received on the Closing Date an opinion and negative assurance letter of Goodwin Procter LLP, counsel for the Company, dated the Closing Date, in form and substance satisfactory to the Representatives.
- (d) The Underwriters shall have received on the Closing Date an opinion letter of Dechert LLP, intellectual property counsel for the Company, dated the Closing Date, in form and substance satisfactory to the Representatives.
- (e) The Underwriters shall have received on the Closing Date an opinion and negative assurance letter of Ropes & Gray LLP, counsel for the Underwriters, dated the Closing Date, in form and substance satisfactory to the Representatives.

With respect to the negative assurance letters to be delivered pursuant to Sections 5(c) and 5(e) above, each of Goodwin Procter LLP and Ropes & Gray LLP may state that their opinions and beliefs are based upon their participation in the preparation of the Registration Statement, the Time of Sale Prospectus and the Prospectus and any amendments or supplements thereto and review and discussion of the contents thereof, but are without independent check or verification, except as specified.

The opinions of Goodwin Procter LLP and Dechert LLP described in Section 5(c) and (d), respectively, shall be rendered to the Underwriters at the request of the Company and shall so state therein.

- (f) The Underwriters shall have received, on each of the date hereof and the Closing Date, a letter dated the date hereof or the Closing Date, as the case may be, in form and substance satisfactory to the Underwriters, from PriceWaterhouseCoopers LLP, independent public accountants, containing statements and information of the type ordinarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained in the Registration Statement, the Time of Sale Prospectus and the Prospectus; *provided* that the letter delivered on the Closing Date shall use a "cut-off date" not earlier than the date hereof.
- (g) The "lock-up" agreements, each substantially in the form of Exhibit A hereto, from certain shareholders, officers and directors of the Company to the Representatives relating to restrictions on sales and certain other dispositions of shares of Common Stock or certain other securities, delivered to the Representatives on or before the date hereof (the "**Lock-up Agreements**"), shall be in full force and effect on the Closing Date.
- (h) The Underwriters shall have received, on or prior to the date hereof and on the Closing Date, such other documents as the Representatives may reasonably request with respect to the good standing of the Company, the due authorization and issuance of the Shares to be sold on the Closing Date and other matters related to the issuance of the Shares.
- (i) The several obligations of the Underwriters to purchase Additional Shares hereunder are subject to the delivery to the Representatives on the applicable Option Closing Date of the following:
 - (i) a certificate, dated the Option Closing Date and signed by an executive officer of the Company, confirming that the certificate delivered on the Closing Date pursuant to Section 5(b) hereof remains true and correct as of such Option Closing Date;
 - (ii) an opinion and negative assurance letter of Goodwin Procter LLP, outside counsel for the Company, dated the Option Closing Date, relating to the Additional Shares to be purchased on such Option Closing Date and otherwise to the same effect as the opinion required by Section 5(c) hereof;
 - (iii) an opinion letter of Dechert LLP, intellectual property counsel for the Company, dated the Option Closing Date, relating to the Additional Shares to be purchased on such Option Closing Date and otherwise to the same effect as the opinion required by Section 5(d) hereof;

- (iv) an opinion and negative assurance letter of Ropes and Gray LLP, counsel for the Underwriters, dated the Option Closing Date, relating to the Additional Shares to be purchased on such Option Closing Date and otherwise to the same effect as the opinion required by Section 5(e) hereof;
 - (v) a letter dated the Option Closing Date, in form and substance satisfactory to the Underwriters, from PriceWaterhouseCoopers LLP, independent public accountants, substantially in the same form and substance as the letter furnished to the Underwriters pursuant to Section 5(f) hereof; provided that the letter delivered on the Option Closing Date shall use a “cut-off date” not earlier than two business days prior to such Option Closing Date; and
 - (vi) such other documents as the Representatives may reasonably request with respect to the good standing of the Company, the due authorization and issuance of the Additional Shares to be sold on such Option Closing Date and other matters related to the issuance of such Additional Shares.
6. *Covenants of the Company.* The Company covenants with each Underwriter as follows:
- (a) To furnish to the Representatives, upon written request, without charge, [five]³ signed copies of the Registration Statement (including exhibits thereto) and for delivery to each other Underwriter a conformed copy of the Registration Statement (without exhibits thereto) and to furnish to the Representatives in New York City, without charge, prior to 10:00 a.m. New York City time on the business day next succeeding the date of this Agreement and during the period mentioned in Section 6(e) or 6(f) below, as many copies of the Time of Sale Prospectus, the Prospectus and any supplements and amendments thereto or to the Registration Statement as the Representatives may reasonably request.
 - (b) Before amending or supplementing the Registration Statement, the Time of Sale Prospectus or the Prospectus, to furnish to the Representatives a copy of each such proposed amendment or supplement and not to file any such proposed amendment or supplement to which the Representatives reasonably object in writing, and to file with the Commission within the applicable period specified in Rule 424(b) under the Securities Act any prospectus required to be filed pursuant to such Rule.
 - (c) To furnish to the Representatives a copy of each proposed free writing prospectus to be prepared by or on behalf of, used by, or referred to by the Company and not to use or refer to any proposed free writing prospectus to which the Representatives reasonably object.

³ NTD: Total number of underwriters, plus one.

- (d) Not to take any action that would result in an Underwriter or the Company being required to file with the Commission pursuant to Rule 433(d) under the Securities Act a free writing prospectus prepared by or on behalf of the Underwriter that the Underwriter otherwise would not have been required to file thereunder.
- (e) If the Time of Sale Prospectus is being used to solicit offers to buy the Shares at a time when the Prospectus is not yet available to prospective purchasers and any event shall occur or condition exist as a result of which it is necessary to amend or supplement the Time of Sale Prospectus in order to make the statements therein, in the light of the circumstances, not misleading, or if any event shall occur or condition exist as a result of which the Time of Sale Prospectus conflicts with the information contained in the Registration Statement then on file, or if, in the opinion of counsel for the Underwriters, it is necessary to amend or supplement the Time of Sale Prospectus to comply with applicable law, forthwith to prepare, file with the Commission and furnish, at its own expense, to the Underwriters and to any dealer upon request, either amendments or supplements to the Time of Sale Prospectus so that the statements in the Time of Sale Prospectus as so amended or supplemented will not, in the light of the circumstances when the Time of Sale Prospectus is delivered to a prospective purchaser, be misleading or so that the Time of Sale Prospectus, as amended or supplemented, will no longer conflict with the Registration Statement, or so that the Time of Sale Prospectus, as amended or supplemented, will comply with applicable law.
- (f) If, during such period after the first date of the public offering of the Shares as in the opinion of counsel for the Underwriters the Prospectus (or in lieu thereof the notice referred to in Rule 173(a) of the Securities Act) is required by law to be delivered in connection with sales by an Underwriter or dealer, any event shall occur or condition exist as a result of which it is necessary to amend or supplement the Prospectus in order to make the statements therein, in the light of the circumstances when the Prospectus (or in lieu thereof the notice referred to in Rule 173(a) of the Securities Act) is delivered to a purchaser, not misleading, or if, in the reasonable opinion of counsel for the Underwriters, it is necessary to amend or supplement the Prospectus to comply with applicable law, forthwith to prepare, file with the Commission and furnish, at its own expense, to the Underwriters and to the dealers (whose names and addresses the Representatives will furnish to the Company) to which Shares may have been sold by the Representatives on behalf of the Underwriters and to any other dealers upon request, either amendments or supplements to the Prospectus so that the statements in the Prospectus as so amended or supplemented will not, in the light of the circumstances when the Prospectus (or in lieu thereof the notice referred to in Rule 173(a) of the Securities Act) is delivered to a purchaser, be misleading or so that the Prospectus, as amended or supplemented, will comply with applicable law.
- (g) To endeavor to qualify the Shares for offer and sale under the securities or Blue Sky laws of such jurisdictions as the Representatives shall reasonably request, provided that the Company shall not be required to (i) qualify as a foreign corporation or other entity or as a dealer in securities in any such jurisdiction where it would not otherwise be required to so qualify, (ii) file any general consent to service of process in any such jurisdiction or (iii) subject itself to taxation in any such jurisdiction if it is not otherwise so subject.

- (h) To make generally available (which may be satisfied by filing with the Commission on its Electronic Data Gathering, Analysis and Retrieval System) to the Company's security holders and to Morgan Stanley as soon as practicable an earnings statement covering a period of at least twelve months beginning with the first fiscal quarter of the Company occurring after the date of this Agreement which shall satisfy the provisions of Section 11(a) of the Securities Act and the rules and regulations of the Commission thereunder.
- (i) To comply with all applicable securities and other laws, rules and regulations in each jurisdiction in which the Directed Shares are offered in connection with the Directed Share Program.
- (j) Whether or not the transactions contemplated in this Agreement are consummated or this Agreement is terminated, to pay or cause to be paid all expenses incident to the performance of its obligations under this Agreement, including: (i) the fees, disbursements and expenses of the Company's counsel and the Company's accountants in connection with the registration and delivery of the Shares under the Securities Act and all other fees or expenses in connection with the preparation and filing of the Registration Statement, any preliminary prospectus, the Time of Sale Prospectus, the Prospectus, any free writing prospectus prepared by or on behalf of, used by, or referred to by the Company and amendments and supplements to any of the foregoing, including all printing costs associated therewith, and the mailing and delivering of copies thereof to the Underwriters and dealers, in the quantities hereinabove specified, (ii) all costs and expenses related to the transfer and delivery of the Shares to the Underwriters, including any transfer or other taxes payable thereon, (iii) the cost of printing or producing any Blue Sky or Legal Investment memorandum in connection with the offer and sale of the Shares under state securities laws and all expenses in connection with the qualification of the Shares for offer and sale under state securities laws as provided in Section 6(g) hereof, including filing fees and the reasonable fees and disbursements of counsel for the Underwriters in connection with such qualification and in connection with the Blue Sky or Legal Investment memorandum (such fees and expenses of counsel in an aggregate amount not to exceed \$10,000), (iv) all filing fees and the reasonable fees and disbursements of counsel to the Underwriters incurred in connection with the review and qualification of the offering of the Shares by the Financial Industry Regulatory Authority (such fees and expenses of counsel in an aggregate amount not to exceed \$35,000), (v) all fees and expenses in connection with the preparation and filing of the registration statement on Form 8-A relating to the Common Stock and all costs and expenses incident to listing the Shares on the NASDAQ Global Market, (vi) the cost of printing certificates representing the Shares, (vii) the costs and charges of any transfer agent, registrar or depository, (viii) the costs and expenses of the Company relating to investor presentations on any "road show" undertaken in connection with the marketing of the offering of the Shares, including, without limitation, expenses associated with the preparation or dissemination of any electronic road show, expenses associated with the production of road show slides and graphics, fees and expenses of any consultants engaged in connection with the road show presentations with the prior approval of the Company, travel and lodging expenses of the representatives and officers of the Company and any such consultants, and the cost of any aircraft chartered in connection with the road show,

(ix) all expenses in connection with any offer and sale of the Shares outside of the United States, including filing fees and the reasonable fees and disbursements of counsel for the Underwriters in connection with offers and sales outside of the United States, (x) the document production charges and expenses associated with printing this Agreement, (xi) all fees and disbursements of counsel incurred by the Underwriters in connection with the Directed Share Program and stamp duties, similar taxes or duties or other taxes, if any, incurred by the Underwriters in connection with the Directed Share Program] and (xii) all other costs and expenses incident to the performance of the obligations of the Company hereunder for which provision is not otherwise made in this Section. It is understood, however, that except as provided in this Section, Section 8 entitled "Indemnity and Contribution", Section 9 entitled "Directed Share Program Indemnification" and the last paragraph of Section 11 below, the Underwriters will pay all of their costs and expenses, including fees and disbursements of their counsel, stock transfer taxes payable on resale of any of the Shares by them and any advertising expenses connected with any offers they may make.

- (k) The Company will promptly notify Morgan Stanley if the Company ceases to be an Emerging Growth Company at any time prior to the later of (i) completion of the distribution of the Shares within the meaning of the Securities Act and (ii) completion of the Restricted Period (as defined in this Section 6).
- (l) If at any time following the distribution of any Testing-the-Waters Communication there occurred or occurs an event or development as a result of which such Testing-the-Waters Communication included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances existing at that subsequent time, not misleading, the Company will promptly notify Morgan Stanley and will promptly amend or supplement, at its own expense, such Testing-the-Waters Communication to eliminate or correct such untrue statement or omission.
- (m) The Company will deliver to each Underwriter (or its agent), on the date of execution of this Agreement, a properly completed and executed Certification Regarding Beneficial Owners of Legal Entity Customers, together with copies of identifying documentation, and the Company undertakes to provide such additional supporting documentation as each Underwriter may reasonably request in connection with the verification of the foregoing Certification.

The Company also covenants with each Underwriter that, without the prior written consent of the Representatives on behalf of the Underwriters, it will not, and will not publicly disclose an intention to, during the period ending 180 days after the date of the Prospectus (the "**Restricted Period**"), (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock or (2) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the Common Stock, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise or (3) file any registration statement with the Commission relating to the offering of any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock.

The restrictions contained in the preceding paragraph shall not apply to (A) the Shares to be sold hereunder, (B) the issuance by the Company of shares of Common Stock upon the exercise of an option or warrant or the conversion of a security outstanding on the date hereof as described in each of the Time of Sale Prospectus and Prospectus, (C) grants of options, restricted stock or other equity awards and the issuance of Common Stock or securities convertible into or exercisable for Common Stock (whether upon the exercise of stock options or otherwise) to employees, officers, directors, advisors, or consultants of the Company pursuant to the terms of an employee benefit plan in effect on the date hereof and as described in the Time of Sale Prospectus, provided that the Company shall cause each recipient of such grant to execute and deliver to the Representatives an agreement substantially in the form of Exhibit A hereto if such recipient has not already delivered one, (D) the filing of a registration statement on Form S-8 to register Common Stock issuable pursuant to any employee benefit plans, qualified stock option plans or other employee compensation plans, described in the Time of Sale Prospectus, (E) Common Stock, or any securities convertible into, or exercisable or exchangeable for, Common Stock, or the entrance into an agreement to issue Common Stock or any securities convertible into, or exercisable or exchangeable for, Common Stock, in connection with any merger, joint venture, strategic alliance, commercial or other collaborative transaction or the acquisition or license of the business, property, technology or other assets of another individual or entity or the assumption of an employee benefit plan in connection with a merger or acquisition; provided that the aggregate number of Common Stock or any securities convertible into, or exercisable or exchangeable for, Common Stock that the Company may issue or agree to issue pursuant to this clause (E) shall not exceed 5% of the total outstanding share capital of the Company immediately following the issuance of the Shares; and provided further, that the recipients of any such shares of Common Stock and securities issued pursuant to this clause (E) during the 180-day restricted period described above shall enter into an agreement substantially in the form of Exhibit A hereto on or prior to such issuance, (F) facilitating the establishment of a trading plan on behalf of shareholder, officer or director of the Company pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of Common Stock, *provided* that (i) such plan does not provide for the transfer of Common Stock during the Restricted Period and (ii) to the extent a public announcement or filing under the Exchange Act, if any, is required of or voluntarily made by the Company regarding the establishment of such plan, such announcement or filing shall include a statement to the effect that no transfer of Common Stock may be made under such plan during the Restricted Period.

If the Representatives, in their sole discretion, agree to release or waive the restrictions on the transfer of Shares set forth in a Lock-up Agreement described in Section 5(g) hereof for an officer or director of the Company and provide the Company with notice of the impending release or waiver at least three business days before the effective date of the release or waiver, the Company agrees to announce the impending release or waiver by a press release substantially in the form of Exhibit B hereto through a major news service at least two business days before the effective date of the release or waiver.

7. *Covenants of the Underwriters.* Each Underwriter, severally and not jointly, covenants with the Company not to take any action that would result in the Company being required to file with the Commission under Rule 433(d) a free writing prospectus prepared by or on behalf of such Underwriter that otherwise would not be required to be filed by the Company thereunder, but for the action of the Underwriter.
8. *Indemnity and Contribution.* (a) The Company agrees to indemnify and hold harmless each Underwriter, each person, if any, who controls any Underwriter within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act and each affiliate of any Underwriter within the meaning of Rule 405 under the Securities Act from and against any and all losses, claims, damages and liabilities (including, without limitation, any legal or other expenses reasonably incurred in connection with defending or investigating any such action or claim) that arise out of, or are based upon, any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement or any amendment thereof, any preliminary prospectus, the Time of Sale Prospectus or any amendment or supplement thereto, any issuer free writing prospectus as defined in Rule 433(h) under the Securities Act, any Company information that the Company has filed, or is required to file, pursuant to Rule 433(d) under the Securities Act, any road show as defined in Rule 433(h) under the Securities Act (a "road show"), the Prospectus or any amendment or supplement thereto, or any Testing-the-Waters Communication, or arise out of, or are based upon, any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, except insofar as such losses, claims, damages or liabilities arise out of, or are based upon, any such untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with any information relating to any Underwriter furnished to the Company in writing by such Underwriter through the Representatives expressly for use therein, it being understood and agreed that the only such information furnished by the Underwriters through the Representatives consists of the information described as such in paragraph (b) below.
- (b) Each Underwriter agrees, severally and not jointly, to indemnify and hold harmless the Company, its directors, its officers who sign the Registration Statement and each person, if any, who controls the Company within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act to the same extent as the foregoing indemnity from the Company to such Underwriter, but only with reference to information relating to such Underwriter furnished to the Company in writing by such Underwriter through the Representatives expressly for use in the Registration Statement, any preliminary prospectus, the Time of Sale Prospectus, any issuer free writing prospectus, road show or the Prospectus or any amendment or supplement thereto. The Company acknowledges that the following statements set forth under the heading "Underwriting," (x) the name of the Underwriters, (y) the first sentence of the seventh paragraph related to the Underwriter's intention not to make sales to discretionary accounts, and (z) the twelfth paragraph related to stabilization and syndicate covering transactions, in the Registration Statement, the Time of Sale Prospectus and the Prospectus constitute the only information furnished in writing by or on behalf of the several Underwriters for inclusion in the documents referred to in the foregoing indemnity (the "**Underwriter Information**").

- (c) In case any proceeding (including any governmental investigation) shall be instituted involving any person in respect of which indemnity may be sought pursuant to Section 8(a) or 8(b), such person (the “**indemnified party**”) shall promptly notify the person against whom such indemnity may be sought (the “**indemnifying party**”) in writing and the indemnifying party, upon request of the indemnified party, shall retain counsel reasonably satisfactory to the indemnified party to represent the indemnified party and any others the indemnifying party may designate in such proceeding and shall pay the fees and disbursements of such counsel related to such proceeding. In any such proceeding, any indemnified party shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such indemnified party unless (i) the indemnifying party and the indemnified party shall have mutually agreed to the retention of such counsel or (ii) the named parties to any such proceeding (including any impleaded parties) include both the indemnifying party and the indemnified party and representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them. It is understood that the indemnifying party shall not, in respect of the legal expenses of any indemnified party in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the fees and expenses of more than one separate firm (in addition to any local counsel) for all such indemnified parties and that all such fees and expenses shall be reimbursed as they are incurred. Such firm shall be designated in writing by the Representatives, in the case of parties indemnified pursuant to Section 8(a), and by the Company, in the case of parties indemnified pursuant to Section 8(b). The indemnifying party shall not be liable for any settlement of any proceeding effected without its written consent, but if settled with such consent or if there be a final judgment for the plaintiff, the indemnifying party agrees to indemnify the indemnified party from and against any loss or liability by reason of such settlement or judgment. Notwithstanding the foregoing sentence, if at any time an indemnified party shall have requested an indemnifying party to reimburse the indemnified party for fees and expenses of counsel as contemplated by the second and third sentences of this paragraph, the indemnifying party agrees that it shall be liable for any settlement of any proceeding effected without its written consent if (i) such settlement is entered into more than 30 days after receipt by such indemnifying party of the aforesaid request and (ii) such indemnifying party shall not have reimbursed the indemnified party in accordance with such request prior to the date of such settlement. No indemnifying party shall, without the prior written consent of the indemnified party, effect any settlement of any pending or threatened proceeding in respect of which any indemnified party is or could have been a party and indemnity could have been sought hereunder by such indemnified party, unless such settlement includes an unconditional release of such indemnified party from all liability on claims that are the subject matter of such proceeding.

- (d) To the extent the indemnification provided for in Section 8(a) or 8(b) is unavailable to an indemnified party or insufficient in respect of any losses, claims, damages or liabilities referred to therein, then each indemnifying party under such paragraph, in lieu of indemnifying such indemnified party thereunder, shall contribute to the amount paid or payable by such indemnified party as a result of such losses, claims, damages or liabilities (i) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other hand from the offering of the Shares or (ii) if the allocation provided by clause 8(d)(i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause 8(d)(i) above but also the relative fault of the Company on the one hand and of the Underwriters on the other hand in connection with the statements or omissions that resulted in such losses, claims, damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other hand in connection with the offering of the Shares shall be deemed to be in the same respective proportions as the net proceeds from the offering of the Shares (before deducting expenses) received by the Company and the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover of the Prospectus, bear to the aggregate Public Offering Price of the Shares. The relative fault of the Company on the one hand and the Underwriters on the other hand shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or by the Underwriters and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Underwriters' respective obligations to contribute pursuant to this Section 8 are several in proportion to the respective number of Shares they have purchased hereunder, and not joint.
- (e) The Company and the Underwriters agree that it would not be just or equitable if contribution pursuant to this Section 8 were determined by *pro rata* allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation that does not take account of the equitable considerations referred to in Section 8(d). The amount paid or payable by an indemnified party as a result of the losses, claims, damages and liabilities referred to in Section 8(d) shall be deemed to include, subject to the limitations set forth above, any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 8, no Underwriter shall be required to contribute any amount in excess of the amount by which the total price at which the Shares underwritten by it and distributed to the public were offered to the public exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The remedies provided for in this Section 8 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any indemnified party at law or in equity.

- (f) The indemnity and contribution provisions contained in this Section 8 and the representations, warranties and other statements of the Company contained in this Agreement shall remain operative and in full force and effect regardless of (i) any termination of this Agreement, (ii) any investigation made by or on behalf of any Underwriter, any person controlling any Underwriter or any affiliate of any Underwriter or by or on behalf of the Company, its officers or directors or any person controlling the Company and (iii) acceptance of and payment for any of the Shares.
9. *Directed Share Program Indemnification.* (a) The Company agrees to indemnify and hold harmless Morgan Stanley, each person, if any, who controls Morgan Stanley within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act and each affiliate of Morgan Stanley within the meaning of Rule 405 of the Securities Act (“**Morgan Stanley Entities**”) from and against any and all losses, claims, damages and liabilities (including, without limitation, any legal or other expenses reasonably incurred in connection with defending or investigating any such action or claim) (i) that arise out of, or are based upon, any untrue statement or alleged untrue statement of a material fact contained in any material prepared by or with the consent of the Company for distribution to Participants in connection with the Directed Share Program or arise out of, or are based upon, any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading; (ii) that arise out of, or are based upon, the failure of any Participant to pay for and accept delivery of Directed Shares that the Participant agreed to purchase; or (iii) related to, arising out of, or in connection with the Directed Share Program, other than losses, claims, damages or liabilities (or expenses relating thereto) that are finally judicially determined to have resulted from the bad faith or gross negligence of Morgan Stanley Entities.
- (b) In case any proceeding (including any governmental investigation) shall be instituted involving any Morgan Stanley Entity in respect of which indemnity may be sought pursuant to Section 9(a), the Morgan Stanley Entity seeking indemnity, shall promptly notify the Company in writing and the Company, upon request of the Morgan Stanley Entity, shall retain counsel reasonably satisfactory to the Morgan Stanley Entity to represent the Morgan Stanley Entity and any others the Company may designate in such proceeding and shall pay the fees and disbursements of such counsel related to such proceeding. In any such proceeding, any Morgan Stanley Entity shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such Morgan Stanley Entity unless (i) the Company shall have agreed to the retention of such counsel or (ii) the named parties to any such proceeding (including any impleaded parties) include both the Company and the Morgan Stanley Entity and representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them. The Company shall not, in respect of the legal expenses of the Morgan Stanley Entities in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the fees and expenses of more than one separate firm (in addition to any local counsel) for all Morgan Stanley Entities. Any such separate firm for the Morgan Stanley Entities shall be designated in writing by Morgan Stanley. The Company shall not be liable for any settlement of any proceeding effected without its written consent, but if settled with such consent or if there be a final judgment for the plaintiff, the Company agrees to indemnify the Morgan Stanley Entities from and against any loss or liability by reason of such settlement or judgment. Notwithstanding

the foregoing sentence, if at any time a Morgan Stanley Entity shall have requested the Company to reimburse it for fees and expenses of counsel as contemplated by the second and third sentences of this paragraph, the Company agrees that it shall be liable for any settlement of any proceeding effected without its written consent if (i) such settlement is entered into more than 30 days after receipt by the Company of the aforesaid request and (ii) the Company shall not have reimbursed the Morgan Stanley Entity in accordance with such request prior to the date of such settlement. The Company shall not, without the prior written consent of Morgan Stanley, effect any settlement of any pending or threatened proceeding in respect of which any Morgan Stanley Entity is or could have been a party and indemnity could have been sought hereunder by such Morgan Stanley Entity, unless such settlement includes an unconditional release of the Morgan Stanley Entities from all liability on claims that are the subject matter of such proceeding.

- (c) To the extent the indemnification provided for in Section 9(a) is unavailable to a Morgan Stanley Entity or insufficient in respect of any losses, claims, damages or liabilities referred to therein, then the Company in lieu of indemnifying the Morgan Stanley Entity thereunder, shall contribute to the amount paid or payable by the Morgan Stanley Entity as a result of such losses, claims, damages or liabilities (i) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Morgan Stanley Entities on the other hand from the offering of the Directed Shares or (ii) if the allocation provided by clause 9(c)(i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause 9(c)(i) above but also the relative fault of the Company on the one hand and of the Morgan Stanley Entities on the other hand in connection with any statements or omissions that resulted in such losses, claims, damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Morgan Stanley Entities on the other hand in connection with the offering of the Directed Shares shall be deemed to be in the same respective proportions as the net proceeds from the offering of the Directed Shares (before deducting expenses) and the total underwriting discounts and commissions received by the Morgan Stanley Entities for the Directed Shares, bear to the aggregate Public Offering Price of the Directed Shares. If the loss, claim, damage or liability is caused by an untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact, the relative fault of the Company on the one hand and the Morgan Stanley Entities on the other hand shall be determined by reference to, among other things, whether the untrue or alleged untrue statement or the omission or alleged omission relates to information supplied by the Company or by the Morgan Stanley Entities and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.
- (d) The Company and the Morgan Stanley Entities agree that it would not be just or equitable if contribution pursuant to this Section 9 were determined by pro rata allocation (even if the Morgan Stanley Entities were treated as one entity for such purpose) or by any other method of allocation that does not take account of the equitable considerations referred to in Section 9(c). The amount paid or payable by the Morgan Stanley Entities as a result of the losses, claims, damages and liabilities referred to in the immediately preceding paragraph shall be deemed to include, subject to the limitations set forth above, any legal

or other expenses reasonably incurred by the Morgan Stanley Entities in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 9, no Morgan Stanley Entity shall be required to contribute any amount in excess of the amount by which the total price at which the Directed Shares distributed to the public were offered to the public exceeds the amount of any damages that such Morgan Stanley Entity has otherwise been required to pay. The remedies provided for in this Section 9 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any indemnified party at law or in equity.

- (e) The indemnity and contribution provisions contained in this Section 9 shall remain operative and in full force and effect regardless of (i) any termination of this Agreement, (ii) any investigation made by or on behalf of any Morgan Stanley Entity or the Company, its officers or directors or any person controlling the Company and (iii) acceptance of and payment for any of the Directed Shares.
- 10. *Termination.* The Underwriters may terminate this Agreement by notice given by Morgan Stanley to the Company, if after the execution and delivery of this Agreement and prior to or on the Closing Date or any Option Closing Date, as the case may be, (i) trading generally shall have been suspended or materially limited on, or by, as the case may be, any of the New York Stock Exchange, the NYSE American, the Nasdaq Global Market, the Chicago Board of Options Exchange, the Chicago Mercantile Exchange or the Chicago Board of Trade or other relevant exchanges, (ii) trading of any securities of the Company shall have been suspended on any exchange or in any over-the-counter market, (iii) a material disruption in securities settlement, payment or clearance services in the United States shall have occurred, (iv) any moratorium on commercial banking activities shall have been declared by Federal or New York State authorities or (v) there shall have occurred any outbreak or escalation of hostilities, or any change in financial markets, or any calamity or crisis that, in the judgment of the Representatives, is material and adverse and which, singly or together with any other event specified in this clause (v), makes it, in the judgment of the Representatives, impracticable or inadvisable to proceed with the offer, sale or delivery of the Shares on the terms and in the manner contemplated in the Time of Sale Prospectus or the Prospectus.
- 11. *Effectiveness; Defaulting Underwriters.* This Agreement shall become effective upon the execution and delivery hereof by the parties hereto.

If, on the Closing Date or an Option Closing Date, as the case may be, any one or more of the Underwriters shall fail or refuse to purchase Shares that it has or they have agreed to purchase hereunder on such date, and the aggregate number of Shares which such defaulting Underwriter or Underwriters agreed but failed or refused to purchase is not more than one-tenth of the aggregate number of the Shares to be purchased on such date, the other Underwriters shall be obligated severally in the proportions that the number of Firm Shares set forth opposite their respective names in Schedule I bears to the aggregate number of Firm Shares set forth opposite the names of all such non-defaulting Underwriters, or in such other proportions as the Representatives may specify, to purchase the Shares which such defaulting Underwriter or Underwriters agreed but failed or refused to purchase on such date; *provided* that in no event shall the

number of Shares that any Underwriter has agreed to purchase pursuant to this Agreement be increased pursuant to this Section 11 by an amount in excess of one-ninth of such number of Shares without the written consent of such Underwriter. If, on the Closing Date, any Underwriter or Underwriters shall fail or refuse to purchase Firm Shares and the aggregate number of Firm Shares with respect to which such default occurs is more than one-tenth of the aggregate number of Firm Shares to be purchased on such date, and arrangements satisfactory to the Representatives and the Company for the purchase of such Firm Shares are not made within 36 hours after such default, this Agreement shall terminate without liability on the part of any non-defaulting Underwriter or the Company. In any such case either the Representatives or the Company shall have the right to postpone the Closing Date, but in no event for longer than seven days, in order that the required changes, if any, in the Registration Statement, in the Time of Sale Prospectus, in the Prospectus or in any other documents or arrangements may be effected. If, on an Option Closing Date, any Underwriter or Underwriters shall fail or refuse to purchase Additional Shares and the aggregate number of Additional Shares with respect to which such default occurs is more than one-tenth of the aggregate number of Additional Shares to be purchased on such Option Closing Date, the non-defaulting Underwriters shall have the option to (i) terminate their obligation hereunder to purchase the Additional Shares to be sold on such Option Closing Date or (ii) purchase not less than the number of Additional Shares that such non-defaulting Underwriters would have been obligated to purchase in the absence of such default. Any action taken under this paragraph shall not relieve any defaulting Underwriter from liability in respect of any default of such Underwriter under this Agreement.

If this Agreement shall be terminated by the Underwriters, or any of them, because of any failure or refusal on the part of the Company to comply with the terms or to fulfill any of the conditions of this Agreement, or if for any reason the Company shall be unable to perform its obligations under this Agreement other than for reason of a default by the Underwriters, the Company will reimburse the Underwriters or such Underwriters as have so terminated this Agreement with respect to themselves, severally, for all out-of-pocket expenses (including the reasonably incurred fees and disbursements of their counsel) reasonably incurred by such Underwriters in connection with this Agreement or the offering contemplated hereunder.

12. *Entire Agreement.* (a) This Agreement, together with any contemporaneous written agreements and any prior written agreements (to the extent not superseded by this Agreement) that relate to the offering of the Shares, represents the entire agreement between the Company and the Underwriters with respect to the preparation of any preliminary prospectus, the Registration Statement, the Time of Sale Prospectus, the Prospectus, the conduct of the offering, and the purchase and sale of the Shares.
- (b) The Company acknowledges that in connection with the offering of the Shares: (i) the Underwriters have acted at arm's length, are not agents of, and owe no fiduciary duties to, the Company or any other person, (ii) the Underwriters owe the Company only those duties and obligations set forth in this Agreement, any contemporaneous written agreements and prior written agreements (to the extent not superseded by this Agreement), if any, (iii) the Underwriters may have interests that differ from those of the

Company, and (iv) none of the activities of the Underwriters in connection with the transactions contemplated herein constitutes a recommendation, investment advice, or solicitation of any action by the Underwriters with respect to any entity or natural person. The Company waives to the full extent permitted by applicable law any claims it may have against the Underwriters arising from an alleged breach of fiduciary duty in connection with the offering of the Shares.

13. *Recognition of the U.S. Special Resolution Regimes.* (a) In the event that any Underwriter that is a Covered Entity becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer from such Underwriter of this Agreement, and any interest and obligation in or under this Agreement, will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if this Agreement, and any such interest and obligation, were governed by the laws of the United States or a state of the United States.
- (b) In the event that any Underwriter that is a Covered Entity or a BHC Act Affiliate of such Underwriter becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under this Agreement that may be exercised against such Underwriter are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if this Agreement were governed by the laws of the United States or a state of the United States.

For purposes of this Section a “**BHC Act Affiliate**” has the meaning assigned to the term “affiliate” in, and shall be interpreted in accordance with, 12 U.S.C. § 1841(k). “**Covered Entity**” means any of the following: (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b). “**Default Right**” has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable. “**U.S. Special Resolution Regime**” means each of (i) the Federal Deposit Insurance Act and the regulations promulgated thereunder and (ii) Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the regulations promulgated thereunder.

14. *Counterparts; Electronic Signature.* This Agreement may be signed in two or more counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument. Delivery of an executed Agreement by one party to the other may be made by facsimile, electronic mail or other transmission method as permitted by applicable law, and the parties hereto agree that any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes. A party’s electronic signature (complying with the New York Electronic Signatures and Records Act (N.Y. State Tech. §§ 301-309), as amended from time to time, or other applicable law) of this Agreement shall have the same validity and effect as a signature affixed by the party’s hand.
15. *Applicable Law.* This Agreement shall be governed by and construed in accordance with the internal laws of the State of New York.

16. *Headings.* The headings of the sections of this Agreement have been inserted for convenience of reference only and shall not be deemed a part of this Agreement.
17. *Notices.* All communications hereunder shall be in writing and effective only upon receipt and if to the Underwriters shall be delivered, mailed or sent to the Representatives at Morgan Stanley & Co. LLC, 1585 Broadway, New York, New York 10036, Attention: Equity Syndicate Desk, with a copy to the Legal Department and Jefferies LLC, 820 Madison Avenue, New York, New York 10022, Attention: [•], with a copy to [•], respectively; and if to the Company shall be delivered, mailed or sent to Vigil Neuroscience, Inc. at 1 Broadway, 7th Floor, Suite 07-300, Cambridge, MA 02142, Attention: Chief Financial Officer; and in each case, with a copy (which copy shall not constitute notice) to Goodwin Procter LLP, 100 Northern Avenue, Boston, MA 02110, Attention: Kingsley L. Taft and Jacqueline Mercier.

Very truly yours,

Vigil Neuroscience, Inc.

By: _____
Name:
Title:

[Signature page to the Underwriting Agreement]

Accepted as of the date hereof

Morgan Stanley & Co. LLC
Jefferies LLC

Acting severally on behalf of themselves and the several
Underwriters named in Schedule I hereto.

By: Morgan Stanley & Co. LLC

By: _____
Name:
Title:

By: Jefferies LLC

By: _____
Name:
Title:

[Signature page to the Underwriting Agreement]

<u>Underwriter</u>	<u>Number of Firm Shares To Be Purchased</u>
Morgan Stanley & Co. LLC	\$ [•]
Jefferies LLC	[•]
Stifel, Nicolaus & Company, Incorporated	[•]
Guggenheim Securities, LLC	[•]
Total:	\$ [•]

Time of Sale Prospectus

1. Preliminary Prospectus issued [•]
2. [identify all free writing prospectuses filed by the Company under Rule 433(d) of the Securities Act]
3. [free writing prospectus containing a description of terms that does not reflect final terms, if the Time of Sale Prospectus does not include a final term sheet]
4. [orally communicated pricing information such as price per share and size of offering if a Rule 134 pricing term sheet is used at the time of sale instead of a pricing term sheet filed by the Company under Rule 433(d) as a free writing prospectus]

**CERTIFICATE OF AMENDMENT
OF THE
SECOND AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
OF
VIGIL NEUROSCIENCE, INC.**

Vigil Neuroscience, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "General Corporation Law"),

DOES HEREBY CERTIFY:

1. That the name of the Corporation is Vigil Neuroscience, Inc., and that this corporation was originally incorporated pursuant to the General Corporation Law on June 22, 2020 under the name Vigil Neuroscience, Inc. The corporation's Certificate of Incorporation was amended and restated by that certain amended and restated Certificate of Incorporation dated as of September 18, 2020.

2. That the Board of Directors of the Corporation duly adopted resolutions proposing to amend the Second Amended and Restated Certificate of Incorporation of the Corporation, declaring said amendment to be advisable and in the best interests of the Corporation and its stockholders, and authorizing the appropriate officers of the Corporation to solicit the consent of the stockholders therefor, which resolutions setting forth the proposed amendments are as follows:

RESOLVED, that the following is hereby inserted into Article FOURTH immediately before the first sentence therein:

"Effective upon the filing of this Certificate of Amendment of the Second Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware (the "Effective Time"), every 2.7732 shares of Common Stock then issued and outstanding or held in the treasury of the Corporation immediately prior to the Effective Time shall automatically be combined into one (1) share of Common Stock, without any further action by the holders of such shares (the "Reverse Stock Split"). The Reverse Stock Split will be effected on a certificate-by-certificate basis, and any fractional shares resulting from such combination shall be rounded down to the nearest whole share on a certificate-by-certificate basis. No fractional shares shall be issued in connection with the Reverse Stock Split. In lieu of any fractional shares to which a holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the fair market value of a share of Common Stock as determined in good faith by the Corporation's Board of Directors; provided, however, the Corporation shall not be required to pay an amount for any fractional share less than \$100. The Reverse Stock Split shall occur automatically without any further action by the holders of the shares of Common Stock and Preferred Stock affected thereby. All rights, preferences and privileges of the Common Stock and the Preferred Stock shall be appropriately adjusted to reflect the Reverse Stock Split in accordance with this Second Amended and Restated Certificate of Incorporation."

3. That the foregoing amendment was approved by the holders of the requisite number of shares of the Corporation in accordance with Section 228 of the General Corporation Law.

4. That said amendment has been duly adopted in accordance with Section 242 of the General Corporation Law.

[Signature Page to Follow]

IN WITNESS WHEREOF, this Certificate of Amendment has been executed by a duly authorized officer of the Corporation on this 30th day of December 2021.

/s/ Ivana Magovčević-Liebisch

Name: Ivana Magovčević-Liebisch

Title: President and Chief Executive Officer

**SECOND AMENDED AND RESTATED
CERTIFICATE OF INCORPORATION OF
VIGIL NEUROSCIENCE, INC.**

(Pursuant to Sections 242 and 245 of the General Corporation Law of the State of Delaware)

Vigil Neuroscience, Inc., a corporation organized and existing under and by virtue of the provisions of the General Corporation Law of the State of Delaware (the “**General Corporation Law**”),

DOES HEREBY CERTIFY:

1. That the name of this corporation is Vigil Neuroscience, Inc., and that this corporation was originally incorporated pursuant to the General Corporation Law on June 22, 2020 under the name Vigil Neuroscience, Inc. The corporation’s Certificate of Incorporation was amended and restated by that certain amended and restated Certificate of Incorporation dated as of September 18, 2020.

2. That the Board of Directors of the Corporation (the “**Board of Directors**”) duly adopted resolutions proposing to further amend and restate the Certificate of Incorporation of this corporation, declaring said amendment and restatement to be advisable and in the best interests of this corporation and its stockholders, and authorizing the appropriate officers of this corporation to solicit the consent of the stockholders therefor, which resolution setting forth the proposed amendment and restatement is as follows:

RESOLVED, that the amended and restated Certificate of Incorporation of this corporation be further amended and restated in its entirety to read as follows:

FIRST: The name of this corporation is Vigil Neuroscience, Inc. (the “**Corporation**”).

SECOND: The address of the registered office of the Corporation in the State of Delaware is 850 New Burton Road, Suite 201, City of Dover, County of Kent, 19904. The name of its registered agent at such address is COGENCY GLOBAL INC.

THIRD: The nature of the business or purposes to be conducted or promoted is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law.

FOURTH: The total number of shares of all classes of stock which the Corporation shall have authority to issue is (i) 72,000,000 shares of Common Stock, \$0.0001 par value per share (“**Common Stock**”) and (ii) 54,179,688 shares of Preferred Stock, \$0.0001 par value per share (“**Preferred Stock**”).

The following is a statement of the designations and the powers, privileges and rights, and the qualifications, limitations or restrictions thereof in respect of each class of capital stock of the Corporation.

A. COMMON STOCK

1. General. The voting, dividend and liquidation rights of the holders of the Common Stock are subject to and qualified by the rights, powers and preferences of the holders of the Preferred Stock set forth herein.

2. Voting. The holders of the Common Stock are entitled to one vote for each share of Common Stock held at all meetings of stockholders (and written actions in lieu of meetings). Except to the extent required by applicable law, there shall be no cumulative voting. The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by (in addition to any vote of the holders of one or more series of Preferred Stock that may be required by the terms of this Second Amended and Restated Certificate of Incorporation) the affirmative vote of the holders of shares of capital stock of the Corporation representing a majority of the votes represented by all outstanding shares of capital stock of the Corporation entitled to vote, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law.

B. PREFERRED STOCK

28,522,592 shares of the authorized Preferred Stock of the Corporation are hereby designated “**Series A Preferred Stock**”, and 25,657,096 shares of the authorized Preferred Stock of the Corporation are hereby designated “**Series B Preferred Stock**”, each with the following rights, preferences, powers, privileges and restrictions, qualifications and limitations. Unless otherwise indicated, references to “sections” or “subsections” in this Part B of this Article Fourth refer to sections and subsections of Part B of this Article Fourth.

1. Dividends. The holders of then outstanding shares of Preferred Stock shall be entitled to receive on a *pari passu* basis, only when, as and if declared by the Board of Directors, out of any funds and assets legally available therefor, dividends at the rate of 8% of the Series A Original Issue Price (as defined below) for each share of Series A Preferred Stock and at the rate of 8% of the Series B Original Issue Price (as defined below) for each share of Series B Preferred Stock, prior and in preference to any declaration or payment of any other dividend (other than dividends on shares of Common Stock payable in shares of Common Stock). The right to receive dividends on shares of Preferred Stock pursuant to the preceding sentence of this Section 1 shall not be cumulative, and no right to dividends shall accrue to holders of Preferred Stock by reason of the fact that dividends on said shares are not declared. The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock) unless (in addition to the obtaining of any consents required elsewhere in this Second Amended and Restated Certificate of Incorporation) the holders of the Preferred Stock then outstanding shall first receive, or simultaneously receive, in addition to the dividends payable pursuant to the first sentence of this Section 1, a dividend on each outstanding share of Preferred Stock in an amount at least equal to (i) in the case of a dividend on Common Stock or any class or series that is convertible into Common Stock, that dividend per share of the applicable series of Preferred Stock as would equal the product of (A) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (B) the number of shares of Common Stock issuable upon conversion of a share of such series of Preferred Stock, in each case calculated on the record date for determination of holders entitled to receive such dividend or (ii) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of such series of Preferred Stock determined by (A) dividing the amount of the dividend

payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to such class or series) and (B) multiplying such fraction by an amount equal to the Original Issue Price for such series of Preferred Stock; *provided* that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one (1) class or series of capital stock of the Corporation, the dividend payable to the holders of such series of Preferred Stock pursuant to this Section 1 shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Preferred Stock dividend for such series of Preferred Stock. The “**Series A Original Issue Price**” shall mean \$2.54700 per share, subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series A Preferred Stock. The “**Series B Original Issue Price**” shall mean \$3.5078 per share, subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series B Preferred Stock. The term “**Original Issue Price**” may refer to the Series A Original Issue Price and/or the Series B Original Issue Price, as the case may be.

2. Liquidation, Dissolution or Winding Up; Certain Mergers, Consolidations and Asset Sales.

2.1 Preferential Payments to Holders of Preferred Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation, the holders of shares of Preferred Stock then outstanding shall be entitled on a *pari passu* basis to be paid out of the assets of the Corporation available for distribution to its stockholders, and in the event of a Deemed Liquidation Event (as defined below), the holders of shares of Preferred Stock then outstanding shall be entitled to be paid out of the consideration payable to stockholders in such Deemed Liquidation Event or out of the Available Proceeds (as defined below), as applicable, before any payment shall be made to the holders of Common Stock by reason of their ownership thereof, an amount per share equal to the greater of (i) the applicable Original Issue Price for such series of Preferred Stock, plus any dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had all shares of such series of Preferred Stock been converted into Common Stock pursuant to Section 4 immediately prior to such liquidation, dissolution, winding up or Deemed Liquidation Event (the amount payable pursuant to this sentence with respect to the Series A Preferred Stock is hereinafter referred to as the “**Series A Liquidation Amount**”, and with respect to the Series B Preferred Stock, the “**Series B Liquidation Amount**”). The term “**Liquidation Amount**” may refer to the Series A Liquidation Amount and/or the Series B Liquidation Amount, as the case may be. If upon any such liquidation, dissolution or winding up of the Corporation or Deemed Liquidation Event, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Preferred Stock the full amount to which they shall be entitled under this Section 2.1, the holders of shares of Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

2.2 Payments to Holders of Common Stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation, after the payment in full of all Series A Liquidation Amounts and Series B Liquidation Amounts required to be paid to the holders of shares of Series A Preferred Stock and Series B Preferred Stock, respectively, the remaining assets of the Corporation available for distribution to its stockholders or, in the

case of a Deemed Liquidation Event, the consideration not payable to the holders of shares of Preferred Stock pursuant to Section 2.1 or the remaining Available Proceeds, as the case may be, shall be distributed among the holders of shares of Common Stock, *pro rata* based on the number of shares held by each such holder, treating for this purpose all such securities as if they had been converted to Common Stock pursuant to the terms of this Second Amended and Restated Certificate of Incorporation immediately prior to such liquidation, dissolution or winding up of the Corporation..

2.3 Deemed Liquidation Events.

2.3.1 Definition. Each of the following events shall be considered a “**Deemed Liquidation Event**” unless the holders of a majority of the outstanding shares of Preferred Stock, voting together as a single class on an as-converted to Common Stock basis (the “**Requisite Holders**”) elect otherwise by written notice sent to the Corporation at least 10 days prior to the effective date of any such event:

(a) a merger or consolidation in which

(i) the Corporation is a constituent party or

(ii) a subsidiary of the Corporation is a constituent party and the Corporation issues shares of its capital stock pursuant to such merger or consolidation, except any such merger or consolidation involving the Corporation or a subsidiary in which the shares of capital stock of the Corporation outstanding immediately prior to such merger or consolidation continue to represent, or are converted into or exchanged for shares of capital stock that represent, immediately following such merger or consolidation, at least a majority, by voting power, of the capital stock of the surviving or resulting corporation; or (2) if the surviving or resulting corporation is a wholly owned subsidiary of another corporation immediately following such merger or consolidation, the parent corporation of such surviving or resulting corporation; or

(b) (1) the sale, lease, transfer, exclusive license or other disposition, in a single transaction or series of related transactions, by the Corporation or any subsidiary of the Corporation of all or substantially all the assets of the Corporation and its subsidiaries taken as a whole, or (2) the sale or disposition (whether by merger, consolidation or otherwise, and whether in a single transaction or a series of related transactions) of one or more subsidiaries of the Corporation if substantially all of the assets of the Corporation and its subsidiaries taken as a whole are held by such subsidiary or subsidiaries, except where such sale, lease, transfer, exclusive license or other disposition is to a wholly owned subsidiary of the Corporation.

2.3.2 Effecting a Deemed Liquidation Event.

(a) The Corporation shall not have the power to effect a Deemed Liquidation Event referred to in Section 2.3.1(a)(i) unless the agreement or plan of merger or consolidation for such transaction (the “**Merger Agreement**”) provides that the consideration payable to the stockholders of the Corporation in such Deemed Liquidation Event shall be paid to the holders of capital stock of the Corporation in accordance with Sections 2.1 and 2.2.

(b) In the event of a Deemed Liquidation Event referred to in Section 2.3.1(a)(ii) or 2.3.1(b), if the Corporation does not effect a dissolution of the Corporation under the

General Corporation Law within 30 days after such Deemed Liquidation Event, then (i) the Corporation shall send a written notice to each holder of Preferred Stock no later than the 30th day after the Deemed Liquidation Event advising such holders of their right (and the requirements to be met to secure such right) pursuant to the terms of the following clause (ii) to require the redemption of such shares of Preferred Stock, and (ii) unless the Requisite Holders request otherwise in a written instrument delivered to the Corporation, the Corporation shall use the consideration received by the Corporation for such Deemed Liquidation Event (net of any retained liabilities associated with the assets sold or technology licensed, as determined in good faith by the Board of Directors), together with any other assets of the Corporation available for distribution to its stockholders, all to the extent permitted by Delaware law governing distributions to stockholders (the “**Available Proceeds**”), on the 60th day after such Deemed Liquidation Event (the “**Redemption Date**”), to redeem all outstanding shares of Preferred Stock at a price per share equal to the Liquidation Amount for such series of Preferred Stock. Notwithstanding the foregoing, in the event of a redemption pursuant to the preceding sentence, if the Available Proceeds are not sufficient to redeem all outstanding shares of Preferred Stock, the Corporation shall redeem on a pari passu basis a pro rata portion of each holder’s shares of Preferred Stock to the fullest extent of such Available Proceeds, based on the respective amounts which would otherwise be payable in respect of the shares to be redeemed if the Available Proceeds were sufficient to redeem all such shares, and shall redeem the remaining shares as soon as it may lawfully do so under Delaware law governing distributions to stockholders. Prior to the distribution or redemption provided for in this Section 2.3.2(b), the Corporation shall not expend or dissipate the consideration received for such Deemed Liquidation Event, except to discharge expenses incurred in connection with such Deemed Liquidation Event or in the ordinary course of business.

(c) Unless the Requisite Holders request otherwise pursuant to Subsection 2.3.2(b)(iii) above the Corporation shall send written notice of the mandatory redemption (the “**Redemption Notice**”) to each holder of record of Preferred Stock not less than thirty (30) days prior to the Redemption Date, which Redemption Notices shall state: (i) the number and series of shares of Preferred Stock held by the holder that the Corporation shall redeem on the Redemption Date specified in the Redemption Notice; (ii) the Redemption Date and the redemption price; (iii) the date upon which the holder’s right to convert such shares terminates; and (iv) for holders of shares in certificated form, that the holder is to surrender to the Corporation, in the manner and at the place designated, his, her or its certificate or certificates representing the shares of Preferred Stock to be redeemed.

(d) On or before the applicable Redemption Date, each holder of shares of Preferred Stock to be redeemed on such Redemption Date, unless such holder has exercised his, her or its right to convert such shares as provided in Section 4, shall, if a holder of shares in certificated form, surrender the certificate or certificates representing such shares (or, if such registered holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation, in the manner and at the place designated in the Redemption Notice, and thereupon the portion of Available Proceeds applicable for such shares shall be payable to the order of the person or entity whose name appears on such certificate or certificates as the owner thereof. In the event less than all of the shares of Preferred Stock represented by a certificate are redeemed, a new certificate representing the unredeemed shares of such Preferred Stock shall promptly be issued to such holder or a new book entry shall be made representing the unredeemed shares of such Preferred Stock, as applicable.

(e) If the Redemption Notice shall have been duly given, and if on the applicable Redemption Date the portion of Available Proceeds payable upon redemption of the shares of Preferred Stock to be redeemed on such Redemption Date is paid or tendered for payment or deposited with an independent payment agent so as to be available therefor in a timely manner, then notwithstanding that any certificates evidencing any of the shares of Preferred Stock so called for redemption shall not have been surrendered, all rights with respect to such shares shall forthwith after the Redemption Date terminate, except only the right of the holders to receive the portion of Available Proceeds applicable to such holders' shares of Preferred Stock, without interest upon surrender of any such certificate or certificates therefor.

2.3.3 Amount Deemed Paid or Distributed. The amount deemed paid or distributed to the holders of capital stock of the Corporation upon any such merger, consolidation, sale, transfer, exclusive license, other disposition or redemption shall be the cash or the value of the property, rights or securities to be paid or distributed to such holders pursuant to such Deemed Liquidation Event. The value of such property, rights or securities shall be determined in good faith by the Board of Directors.

2.3.4 Allocation of Escrow and Contingent Consideration. In the event of a Deemed Liquidation Event pursuant to Section 2.3.1(a)(i), if any portion of the consideration payable to the stockholders of the Corporation is payable only upon satisfaction of contingencies (the "**Additional Consideration**"), the Merger Agreement shall provide that (a) the portion of such consideration that is not Additional Consideration (such portion, the "**Initial Consideration**") shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1 and 2.2 as if the Initial Consideration were the only consideration payable in connection with such Deemed Liquidation Event; and (b) any Additional Consideration which becomes payable to the stockholders of the Corporation upon satisfaction of such contingencies shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2.1 and 2.2 after taking into account the previous payment of the Initial Consideration as part of the same transaction. For the purposes of this Section 2.3.4, consideration placed into escrow or retained as a holdback to be available for satisfaction of indemnification or similar obligations in connection with such Deemed Liquidation Event shall be deemed to be Additional Consideration.

3. Voting.

3.1 General. On any matter presented to the stockholders of the Corporation for their action or consideration at any meeting of stockholders of the Corporation (or by written consent of stockholders in lieu of meeting), each holder of outstanding shares of Preferred Stock shall be entitled to cast the number of votes equal to the number of whole shares of Common Stock into which the shares of Preferred Stock held by such holder are convertible as of the record date for determining stockholders entitled to vote on such matter. Except as provided by law or by the other provisions of this Second Amended and Restated Certificate of Incorporation, holders of Preferred Stock shall vote together with the holders of Common Stock as a single class and on an as-converted to Common Stock basis.

3.2 Election of Directors. The holders of record of the shares of Series A Preferred Stock, exclusively and as a separate class, shall be entitled to elect three directors of the Corporation (the "**Series A Directors**"). The holders of record of the shares of Series B Preferred Stock, exclusively and as a separate class, shall be entitled to elect one director of the Corporation (the "**Series B Director**", and together with the Series A Directors, the "**Preferred Directors**"). Any directors elected as provided in the preceding two sentences may be removed without cause

by, and only by, the affirmative vote of the holders of the shares of the class or series of capital stock entitled to elect such director or directors, given either at a special meeting of such stockholders duly called for that purpose or pursuant to a written consent of stockholders. If the holders of shares of Series A Preferred Stock or Series B Preferred Stock, as the case may be, fail to elect a sufficient number of directors to fill all directorships for which they are entitled to elect directors, voting exclusively and as a separate class, pursuant to the first and second sentences of this Section 3.2, then any directorship not so filled shall remain vacant until such time as the holders of the Series A Preferred Stock or Series B Preferred Stock, as the case may be, elect a person to fill such directorship by vote or written consent in lieu of a meeting; and no such directorship may be filled by the Board of Directors or the stockholders of the Corporation (other than by the stockholders of the Corporation that are entitled to elect a person to fill such directorship, voting exclusively and as a separate class). The holders of record of the shares of Common Stock and of any other class or series of voting stock (including the Preferred Stock), exclusively and voting together as a single class on an as-converted to Common Stock basis, shall be entitled to elect the balance of the total number of directors of the Corporation. At any meeting held for the purpose of electing a director, the presence in person or by proxy of the holders of a majority of the outstanding shares of the class or series entitled to elect such director shall constitute a quorum for the purpose of electing such director. Except as otherwise provided in this Section 3.2, a vacancy in any directorship filled by the holders of any class or series shall be filled only by vote or written consent in lieu of a meeting of the holders of such class or series or by any remaining director or directors elected by the holders of such class or series pursuant to this Section 3.2. The rights of the holders of the Series A Preferred Stock under the first sentence of this Section 3.2 shall terminate on the first date following the Original Issue Date (as defined below) on which there are issued and outstanding less than 4,500,000 shares of Series A Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization with respect to the Series A Preferred Stock). The rights of the holders of the Series B Preferred Stock under the second sentence of this Section 3.2 shall terminate on the first date following the Original Issue Date on which there are issued and outstanding less than 3,848,564 shares of Series B Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization with respect to the Series B Preferred Stock).

3.3 Preferred Stock Protective Provisions. At any time when at least 8,126,953 shares of Preferred Stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Preferred Stock) are outstanding, the Corporation shall not (and the Corporation's subsidiaries shall not), either directly or indirectly by amendment, merger, consolidation, recapitalization, reclassification or otherwise, do any of the following without (in addition to any other vote required by law or this Second Amended and Restated Certificate of Incorporation) the written consent or affirmative vote of the Requisite Holders given in writing or by vote at a meeting, consenting or voting (as the case may be) separately as a class, and any such act or transaction entered into without such consent or vote shall be null and void *ab initio*, and of no force or effect:

(a) liquidate, dissolve or wind-up the business and affairs of the Corporation, effect any merger or consolidation or any other Deemed Liquidation Event including any merger, acquisition, business combination or similar transaction with a special purpose acquisition company or its subsidiary or affiliate, or consent to any of the foregoing;

(b) amend, alter or repeal any provision of this Second Amended and Restated Certificate of Incorporation or Bylaws of the Corporation, including, without limitation, any amendment to increase the number of authorized shares of Common Stock or Preferred Stock (or any series thereof);

(c) create, or authorize the creation of, or issue or obligate itself to issue shares of, any additional class or series of capital stock or issue any other security convertible into or exercisable for any equity security, unless the same ranks junior to the Preferred Stock with respect to its rights, preferences and privileges, or increase the authorized number of shares of Preferred Stock, or increase the authorized number of shares of any additional class or series of capital stock of the Corporation unless the same ranks junior to the Preferred Stock with respect to its rights, preferences and privileges;

(d) (i) reclassify, alter or amend any existing security of the Corporation that is *pari passu* with the Preferred Stock in respect of with respect to its rights, preferences and privileges, if such reclassification, alteration or amendment would render such other security senior to the Preferred Stock in respect of any such right, preference, or privilege or (ii) reclassify, alter or amend any existing security of the Corporation that is junior to the Preferred Stock with respect to its rights, preferences and privileges, if such reclassification, alteration or amendment would render such other security senior to or *pari passu* with the Preferred Stock in respect of any such right, preference or privilege;

(e) purchase or redeem (or permit any subsidiary to purchase or redeem) or pay or declare any dividend or make any distribution on, any shares of capital stock of the Corporation other than (i) redemptions of or dividends or distributions on the Preferred Stock as expressly authorized herein, or (ii) repurchases of stock from former employees, officers, directors, consultants or other persons who performed services for the Corporation or any subsidiary in connection with the cessation of such employment or service at the lower of the original purchase price thereof or the current fair market value, as approved by the Board of Directors, including the approval of at least three (3) of the four (4) Preferred Directors (the “**Requisite Preferred Directors**”);

(f) create, or hold capital stock in, any subsidiary that is not wholly owned (either directly or through one or more other subsidiaries) by the Corporation, or permit any subsidiary to create, or authorize the creation of, or issue or obligate itself to issue, any shares of any class or series of capital stock, or sell, transfer or otherwise dispose of any capital stock of any direct or indirect subsidiary of the Corporation, or permit any direct or indirect subsidiary to sell, lease, transfer, exclusively license or otherwise dispose (in a single transaction or series of related transactions) of all or substantially all of the assets of such subsidiary;

(g) increase or decrease the authorized number of directors constituting the Board of Directors, change the number of votes entitled to be cast by any director or directors on any matter, or adopt any provision inconsistent with Article Sixth;

(h) increase the number of shares authorized for issuance under any existing equity incentive plan or create any new equity incentive plan such that the aggregate number of shares authorized for issuance under all such equity incentive plans exceeds 9,389,281 (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Common Stock);

(i) otherwise enter into or be a party to any transaction with any director, officer, stockholder or member of senior management (i.e. SVP and above) of the Corporation or any “associate” (as defined in Rule 12b-2 promulgated under the Exchange Act) of any such Person, including without limitation any “management bonus” or similar plan providing payments to officers and senior management in connection with a Deemed Liquidation Event, except for employment-related agreement and benefits and arms’ length agreements upon reasonable terms that are approved by a majority of the Board of Directors, including the Requisite Preferred Directors;

(j) change the principal business of the Corporation, enter new lines of business, or exit the current line of business;

(k) create, or authorize the creation of, or issue, or authorize the issuance of any debt security or create any lien or security interest (except for purchase money liens or statutory liens of landlords, mechanics, materialmen, workmen, warehousemen and other similar persons arising or incurred in the ordinary course of business) or incur other indebtedness for borrowed money, including but not limited to obligations and contingent obligations under guarantees, or permit any subsidiary to take any such action with respect to any debt security lien, security interest or other indebtedness for borrowed money, if the aggregate indebtedness of the Corporation and its subsidiaries for borrowed money following such action would exceed \$1,000,000, unless such debt security has received the prior approval of the Board of Directors, including the Requisite Preferred Directors;

(l) enter into any corporate strategic relationship involving the payment, contribution, or assignment by the Corporation (or any subsidiary thereof) or to the Corporation (or any subsidiary thereof) of money or assets with a fair market value greater than \$1,000,000;

(m) sell, assign, license, pledge, or encumber material technology or intellectual property of the Corporation (or any of its subsidiaries), or enter into or grant any royalty streams related thereto, other than licenses granted in the ordinary course of business;

(n) amend, waive, alter or appeal this Section 3.3; or

(o) cause or permit any of its subsidiaries to take any action with respect to the foregoing without the written consent or affirmative vote of the Requisite Holders.

4. Optional Conversion. The holders of the Preferred Stock shall have conversion rights as follows (the “**Conversion Rights**”):

4.1 Right to Convert.

4.1.1 Conversion Ratio. Each share of Preferred Stock shall be convertible, at the option of the holder thereof, at any time and from time to time, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the Original Issue Price for such series of Preferred Stock by the Conversion Price for such series of Preferred Stock in effect at the time of conversion; provided that such holder may waive such option to convert pursuant to this

Section 4.1.1 upon written notice to the Company. The “**Series A Conversion Price**” shall initially be equal to the Series A Original Issue Price. Such initial Series A Conversion Price, and the rate at which shares of Series A Preferred Stock may be converted into shares of Common Stock, shall be subject to adjustment as provided below. The “**Series B Conversion Price**” shall initially be equal to the Series B Original Issue Price. Such initial Series B Conversion Price, and the rate at which shares of Series B Preferred Stock may be converted into shares of Common Stock, shall be subject to adjustment as provided below. The term “**Conversion Price**” may refer to the Series A Conversion Price and/or the Series B Conversion Price, as the case may be.

4.1.2 Termination of Conversion Rights. In the event of a liquidation, dissolution or winding up of the Corporation or a Deemed Liquidation Event, the Conversion Rights shall terminate at the close of business on the last full day preceding the date fixed for the payment of any such amounts distributable on such event to the holders of Preferred Stock; provided that the foregoing termination of Conversion Rights shall not affect the amount(s) otherwise paid or payable in accordance with Section 2.1 to holders of Preferred Stock pursuant to such liquidation, dissolution or winding up of the Corporation or a Deemed Liquidation Event.

4.2 Fractional Shares. No fractional shares of Common Stock shall be issued upon conversion of the Preferred Stock. In lieu of any fractional shares to which the holder would otherwise be entitled, the number of shares of Common Stock to be issued upon conversion of the Preferred Stock shall be rounded to the nearest whole share.

4.3 Mechanics of Conversion.

4.3.1 Notice of Conversion. In order for a holder of Preferred Stock to voluntarily convert shares of Preferred Stock into shares of Common Stock, such holder shall (a) provide written notice to the Corporation’s transfer agent at the office of the transfer agent for the Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent) that such holder elects to convert all or any number of such holder’s shares of Preferred Stock and, if applicable, any event on which such conversion is contingent and (b), if such holder’s shares are certificated, surrender the certificate or certificates for such shares of Preferred Stock (or, if such registered holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate), at the office of the transfer agent for the Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent). Such notice shall state such holder’s name or the names of the nominees in which such holder wishes the shares of Common Stock to be issued. If required by the Corporation, any certificates surrendered for conversion shall be endorsed or accompanied by a written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or his, her or its attorney duly authorized in writing. The close of business on the date of receipt by the transfer agent (or by the Corporation if the Corporation serves as its own transfer agent) of such notice and, if applicable, certificates (or lost certificate affidavit and agreement) shall be the time of conversion (the “**Conversion Time**”), and the shares of Common Stock issuable upon conversion of the specified shares shall be deemed to be outstanding of record as of such date. The Corporation shall, as soon as practicable after the Conversion Time (i) issue and deliver to such holder of Preferred Stock, or to his, her or its nominees, a certificate or certificates for the number of full

shares of Common Stock issuable upon such conversion in accordance with the provisions hereof and a certificate for the number (if any) of the shares of Preferred Stock represented by the surrendered certificate that were not converted into Common Stock, and (ii) pay all declared but unpaid dividends on the shares of Preferred Stock converted.

4.3.2 Reservation of Shares. The Corporation shall at all times when the Preferred Stock shall be outstanding, reserve and keep available out of its authorized but unissued capital stock, for the purpose of effecting the conversion of the Preferred Stock, such number of its duly authorized shares of Common Stock as shall from time to time be sufficient to effect the conversion of all outstanding Preferred Stock; and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares of the Preferred Stock, the Corporation shall take such corporate action as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes, including, without limitation, engaging in best efforts to obtain the requisite stockholder approval of any necessary amendment to this Second Amended and Restated Certificate of Incorporation. Before taking any action which would cause an adjustment reducing the Conversion Price for a series of Preferred Stock below the then par value of the shares of Common Stock issuable upon conversion of such series of Preferred Stock, the Corporation will take any corporate action which may, in the opinion of its counsel, be necessary in order that the Corporation may validly and legally issue fully paid and non-assessable shares of Common Stock at such adjusted Conversion Price.

4.3.3 Effect of Conversion. All shares of Preferred Stock which shall have been surrendered for conversion as herein provided shall no longer be deemed to be outstanding and all rights with respect to such shares shall immediately cease and terminate at the Conversion Time, except only the right of the holders thereof to receive shares of Common Stock in exchange therefor and to receive payment of any dividends declared but unpaid thereon. Any shares of Preferred Stock so converted shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such appropriate action (without the need for stockholder action regardless of the provisions of Section 3.3 above) as may be necessary to reduce the authorized number of shares of Preferred Stock accordingly.

4.3.4 No Further Adjustment. Upon any such conversion, no adjustment to the Conversion Price for a series of Preferred Stock shall be made for any declared but unpaid dividends on such series of Preferred Stock surrendered for conversion or on the Common Stock delivered upon conversion.

4.3.5 Taxes. The Corporation shall pay any and all issue and other similar taxes that may be payable in respect of any issuance or delivery of shares of Common Stock upon conversion of shares of Preferred Stock pursuant to this Section 4. The Corporation shall not, however, be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of shares of Common Stock in a name other than that in which the shares of Preferred Stock so converted were registered, and no such issuance or delivery shall be made unless and until the person or entity requesting such issuance has paid to the Corporation the amount of any such tax or has established, to the satisfaction of the Corporation, that such tax has been paid.

4.4 Adjustments to Conversion Price for Diluting Issues.

4.4.1 **Special Definitions.** For purposes of this Article Fourth, the following definitions shall apply:

- (a) “**Option**” shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.
- (b) “**Original Issue Date**” shall mean the date on which the first share of Series B Preferred Stock was issued.
- (c) “**Convertible Securities**” shall mean any evidences of indebtedness, shares or other securities directly or indirectly convertible into or exchangeable for Common Stock, but excluding Options.
- (d) “**Additional Shares of Common Stock**” shall mean all shares of Common Stock issued (or, pursuant to Section 4.4.3 below, deemed to be issued) by the Corporation after the Original Issue Date, other than (1) the following shares of Common Stock and (2) shares of Common Stock deemed issued pursuant to the following Options and Convertible Securities (clauses (1) and (2), collectively, “**Exempted Securities**”):
- (i) as to any series of Preferred Stock, shares of Common Stock, Options or Convertible Securities issued as a dividend or distribution on such series of Preferred Stock;
 - (ii) shares of Common Stock, Options or Convertible Securities issued by reason of a dividend, stock split, split-up or other distribution on shares of Common Stock that is covered by Sections 4.5, 4.6, 4.7 or 4.8;
 - (iii) shares of Common Stock or Options issued to employees or directors of, or consultants or advisors to, the Corporation or any of its subsidiaries pursuant to a plan, agreement or arrangement approved by the Board of Directors, including the approval of at least two (2) Series A Directors and one (1) Series B Director;
 - (iv) shares of Common Stock or Convertible Securities actually issued upon the exercise of Options or shares of Common Stock actually issued upon the conversion or exchange of Convertible Securities, in each case provided such issuance is pursuant to the terms of such Option or Convertible Security;
 - (v) shares of Common Stock, Options or Convertible Securities issued to banks, equipment lessors or other financial institutions, or to real property lessors, pursuant to a debt financing, equipment leasing or real property leasing transaction approved by the Board of Directors, including the approval of at least two (2) Series A Directors and one (1) Series B Director;
 - (vi) shares of Common Stock, Options or Convertible Securities issued to suppliers or third party service providers as consideration for the provision of goods or services pursuant to transactions approved by the Board of Directors, including the approval of at least two (2) Series A Directors and one (1) Series B Director;
 - (vii) shares of Common Stock, Options or Convertible Securities issued as acquisition consideration pursuant to the acquisition of another corporation by

the Corporation by merger, purchase of substantially all of the assets or other reorganization or to a joint venture agreement, *provided* that such issuances are approved by the Board of Directors, including the approval of at least two (2) Series A Directors and one (1) Series B Director; or

(viii) shares of Common Stock, Options or Convertible Securities issued in connection with sponsored research, collaboration, technology license, development, original equipment manufacturing, marketing or other similar agreements or strategic partnerships approved by the Board of Directors, including the approval of at least two (2) Series A Directors and one (1) Series B Director.

4.4.2 No Adjustment of Conversion Price. No adjustment in the Series A Conversion Price shall be made as the result of the issuance or deemed issuance of Additional Shares of Common Stock if the Corporation receives written notice from a majority of the outstanding Series A Preferred Stock agreeing that no such adjustment shall be made as the result of the issuance or deemed issuance of such Additional Shares of Common Stock. No adjustment in the Series B Conversion Price shall be made as the result of the issuance or deemed issuance of Additional Shares of Common Stock if the Corporation receives written notice from a majority of the outstanding Series B Preferred Stock agreeing that no such adjustment shall be made as the result of the issuance or deemed issuance of such Additional Shares of Common Stock.

4.4.3 Deemed Issue of Additional Shares of Common Stock.

(a) If the Corporation at any time or from time to time after the Original Issue Date shall issue any Options or Convertible Securities (excluding Options or Convertible Securities which are themselves Exempted Securities) or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares of Common Stock (as set forth in the instrument relating thereto, assuming the satisfaction of any conditions to exercisability, convertibility or exchangeability but without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be Additional Shares of Common Stock issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date.

(b) If the terms of any Option or Convertible Security, the issuance of which resulted in an adjustment to the Conversion Price for a series of Preferred Stock pursuant to the terms of Section 4.4.4, are revised as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security) to provide for either (1) any increase or decrease in the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any such Option or Convertible Security or (2) any increase or decrease in the consideration payable to the Corporation upon such exercise, conversion and/or exchange, then, effective upon such increase or decrease becoming effective, the Conversion Price for such series of Preferred Stock computed upon the original issue of such Option or Convertible Security (or upon the occurrence of a record date with respect thereto) shall be readjusted to such Conversion Price as would have obtained had such revised terms been in effect upon the original date of issuance of such Option or Convertible Security. Notwithstanding the foregoing, no readjustment pursuant to this clause (b) shall have the effect of increasing the Conversion Price for such series of Preferred Stock to an amount which exceeds the lower of (i) the Conversion Price for such series of Preferred Stock in effect immediately prior to the original adjustment made as a

result of the issuance of such Option or Convertible Security, or (ii) the Conversion Price for such series of Preferred Stock that would have resulted from any issuances of Additional Shares of Common Stock (other than deemed issuances of Additional Shares of Common Stock as a result of the issuance of such Option or Convertible Security) between the original adjustment date and such readjustment date.

(c) If the terms of any Option or Convertible Security (excluding Options or Convertible Securities which are themselves Exempted Securities), the issuance of which did not result in an adjustment to the Conversion Price for a series of Preferred Stock pursuant to the terms of Section 4.4.4 (either because the consideration per share (determined pursuant to Section 4.4.5) of the Additional Shares of Common Stock subject thereto was equal to or greater than the Conversion Price for such series of Preferred Stock then in effect, or because such Option or Convertible Security was issued before the Original Issue Date), are revised after the Original Issue Date as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security) to provide for either (1) any increase in the number of shares of Common Stock issuable upon the exercise, conversion or exchange of any such Option or Convertible Security or (2) any decrease in the consideration payable to the Corporation upon such exercise, conversion or exchange, then such Option or Convertible Security, as so amended or adjusted, and the Additional Shares of Common Stock subject thereto (determined in the manner provided in Section 4.4.3(a) shall be deemed to have been issued effective upon such increase or decrease becoming effective).

(d) Upon the expiration or termination of any unexercised Option or unconverted or unexchanged Convertible Security (or portion thereof) which resulted (either upon its original issuance or upon a revision of its terms) in an adjustment to the Conversion Price for a series of Preferred Stock pursuant to the terms of Section 4.4.4, the Conversion Price for such series of Preferred Stock shall be readjusted to such Conversion Price as would have obtained had such Option or Convertible Security (or portion thereof) never been issued.

(e) If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, is calculable at the time such Option or Convertible Security is issued or amended but is subject to adjustment based upon subsequent events, any adjustment to the Conversion Price for a series of Preferred Stock provided for in this Section 4.4.3 shall be effected at the time of such issuance or amendment based on such number of shares or amount of consideration without regard to any provisions for subsequent adjustments (and any subsequent adjustments shall be treated as provided in clauses (b) and (c) of this Section 4.4.3). If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, cannot be calculated at all at the time such Option or Convertible Security is issued or amended, any adjustment to the Conversion Price for a series of Preferred Stock that would result under the terms of this Section 4.4.3 at the time of such issuance or amendment shall instead be effected at the time such number of shares and/or amount of consideration is first calculable (even if subject to subsequent adjustments), assuming for purposes of calculating such adjustment to the Conversion Price that such issuance or amendment took place at the time such calculation can first be made.

4.4.4 Adjustment of Conversion Price Upon Issuance of Additional Shares of Common Stock. In the event the Corporation shall at any time after the Original Issue Date issue Additional Shares of Common Stock (including Additional Shares of Common Stock deemed to be issued pursuant to Section 4.4.3), without consideration or for a consideration per share less than the applicable Conversion Price in effect immediately prior to such issuance or deemed issuance, then such Conversion Price shall be reduced, concurrently with such issue, to a price (calculated to the nearest one-hundredth of a cent) determined in accordance with the following formula:

$$CP_2 = CP_1 * (A+B) / (A+C)$$

For purposes of the foregoing formula, the following definitions shall apply:

- (a) “**CP₂**” shall mean the Conversion Price in effect immediately after such issuance or deemed issuance of Additional Shares of Common Stock
- (b) “**CP₁**” shall mean the Conversion Price in effect immediately prior to such issuance or deemed issuance of Additional Shares of Common Stock;
- (c) “**A**” shall mean the number of shares of Common Stock outstanding immediately prior to such issuance or deemed issuance of Additional Shares of Common Stock (treating for this purpose as outstanding all shares of Common Stock issuable upon exercise of Options outstanding immediately prior to such issuance or deemed issuance or upon conversion or exchange of Convertible Securities (including the Preferred Stock) outstanding (assuming exercise of any outstanding Options therefor) immediately prior to such issue);
- (d) “**B**” shall mean the number of shares of Common Stock that would have been issued if such Additional Shares of Common Stock had been issued or deemed issued at a price per share equal to CP_1 (determined by dividing the aggregate consideration received by the Corporation in respect of such issue by CP_1); and
- (e) “**C**” shall mean the number of such Additional Shares of Common Stock issued in such transaction.

4.4.5 Determination of Consideration. For purposes of this Section 4.4, the consideration received by the Corporation for the issuance or deemed issuance of any Additional Shares of Common Stock shall be computed as follows:

- (a) **Cash and Property.** Such consideration shall:
 - (i) insofar as it consists of cash, be computed at the aggregate amount of cash received by the Corporation, excluding amounts paid or payable for accrued interest;
 - (ii) insofar as it consists of property other than cash, be computed at the fair market value thereof at the time of such issue, as determined in good faith by the Board of Directors; and
 - (iii) in the event Additional Shares of Common Stock are issued together with other shares or securities or other assets of the Corporation for consideration which covers both, be the proportion of such consideration so received, computed as provided in clauses (i) and (ii) above, as determined in good faith by the Board of Directors.

(b) **Options and Convertible Securities.** The consideration per share received by the Corporation for Additional Shares of Common Stock deemed to have been issued pursuant to Section 4.4.3, relating to Options and Convertible Securities, shall be determined by dividing:

(i) The total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, by

(ii) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities.

4.4.6 Multiple Closing Dates. In the event the Corporation shall issue on more than one date Additional Shares of Common Stock that are a part of one transaction or a series of related transactions and that would result in an adjustment to the Conversion Price for a series of Preferred Stock pursuant to the terms of Section 4.4.4, and such issuance dates occur within a period of no more than ninety (90) days from the first such issuances to the final such issuance, then, upon the final such issuance, the Conversion Price for such series of Preferred Stock shall be readjusted to give effect to all such issuances as if they occurred on the date of the first such issuance (and without giving effect to any additional adjustments as a result of any such subsequent issuances within such period).

4.5 Adjustment for Stock Splits and Combinations. If the Corporation shall at any time or from time to time after the Original Issue Date effect a subdivision of the outstanding Common Stock, the Conversion Price for a series of Preferred Stock in effect immediately before that subdivision shall be proportionately decreased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be increased in proportion to such increase in the aggregate number of shares of Common Stock outstanding. If the Corporation shall at any time or from time to time after the Original Issue Date combine the outstanding shares of Common Stock, the Conversion Price for a series of Preferred Stock in effect immediately before the combination shall be proportionately increased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be decreased in proportion to such decrease in the aggregate number of shares of Common Stock outstanding. Any adjustment under this subsection shall become effective at the close of business on the date the subdivision or combination becomes effective.

4.6 Adjustment for Certain Dividends and Distributions. In the event the Corporation at any time or from time to time after the Original Issue Date shall make or issue,

or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable on the Common Stock in additional shares of Common Stock, then and in each such event the Conversion Price for a series of Preferred Stock in effect immediately before such event shall be decreased as of the time of such issuance or, in the event such a record date shall have been fixed, as of the close of business on such record date, by multiplying the Conversion Price for such series of Preferred Stock then in effect by a fraction:

(1) the numerator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date, and

(2) the denominator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date plus the number of shares of Common Stock issuable in payment of such dividend or distribution.

Notwithstanding the foregoing (a) if such record date shall have been fixed and such dividend is not fully paid or if such distribution is not fully made on the date fixed therefor, the Conversion Price for such series of Preferred Stock shall be recomputed accordingly as of the close of business on such record date and thereafter such Conversion Price shall be adjusted pursuant to this subsection as of the time of actual payment of such dividends or distributions; and (b) no such adjustment shall be made if the holders of Preferred Stock simultaneously receive a dividend or other distribution of shares of Common Stock in a number equal to the number of shares of Common Stock as they would have received if all outstanding shares of Preferred Stock had been converted into Common Stock on the date of such event.

4.7 Adjustments for Other Dividends and Distributions. In the event the Corporation at any time or from time to time after the Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation (other than a distribution of shares of Common Stock in respect of outstanding shares of Common Stock) or in other property and the provisions of Section 1 do not apply to such dividend or distribution, then and in each such event the holders of Preferred Stock shall receive, simultaneously with the distribution to the holders of Common Stock, a dividend or other distribution of such securities or other property in an amount equal to the amount of such securities or other property as they would have received if all outstanding shares of Preferred Stock had been converted into Common Stock on the date of such event.

4.8 Adjustment for Merger or Reorganization, etc. Subject to the provisions of Section 2.3, if there shall occur any reorganization, recapitalization, reclassification, consolidation or merger involving the Corporation in which the Common Stock (but not the Preferred Stock) is converted into or exchanged for securities, cash or other property (other than a transaction covered by Section 4.4, 4.6 or 4.7), then, following any such reorganization, recapitalization, reclassification, consolidation or merger, each share of Preferred Stock shall thereafter be convertible in lieu of the Common Stock into which it was convertible prior to such event into the kind and amount of securities, cash or other property which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of one share of such Preferred Stock immediately prior to such reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such

transaction; and, in such case, appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions in this Section 4 with respect to the rights and interests thereafter of the holders of such series of Preferred Stock, to the end that the provisions set forth in this Section 4 (including provisions with respect to changes in and other adjustments of the Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any securities or other property thereafter deliverable upon the conversion of the such Preferred Stock.

4.9 Certificate as to Adjustments. Upon the occurrence of each adjustment or readjustment of the Conversion Price for a series of Preferred Stock pursuant to this Section 4, the Corporation at its expense shall, as promptly as reasonably practicable but in any event not later than 10 days thereafter, compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of such series of Preferred Stock a certificate setting forth such adjustment or readjustment (including the kind and amount of securities, cash or other property into which the such series of Preferred Stock is convertible) and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, as promptly as reasonably practicable after the written request at any time of any holder of such series of Preferred Stock (but in any event not later than 10 days thereafter), furnish or cause to be furnished to such holder a certificate setting forth (i) the Conversion Price then in effect, and (ii) the number of shares of Common Stock and the amount, if any, of other securities, cash or property which then would be received upon the conversion of such series of Preferred Stock.

4.10 Notice of Record Date. In the event:

(a) the Corporation shall take a record of the holders of its Common Stock (or other capital stock or securities at the time issuable upon conversion of the Preferred Stock) for the purpose of entitling or enabling them to receive any dividend or other distribution, or to receive any right to subscribe for or purchase any shares of capital stock of any class or any other securities, or to receive any other security; or

(b) of any capital reorganization of the Corporation, any reclassification of the Common Stock of the Corporation, or any Deemed Liquidation Event; or

(c) of the voluntary or involuntary dissolution, liquidation or winding up of the Corporation, then, and in each such case, the Corporation will send or cause to be sent to the holders of the Preferred Stock a notice specifying, as the case may be, (i) the record date for such dividend, distribution or right, and the amount and character of such dividend, distribution or right, or (ii) the effective date on which such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up is proposed to take place, and the time, if any is to be fixed, as of which the holders of record of Common Stock (or such other capital stock or securities at the time issuable upon the conversion of the Preferred Stock) shall be entitled to exchange their shares of Common Stock (or such other capital stock or securities) for securities or other property deliverable upon such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up, and the amount per share and character of such exchange applicable to the Preferred Stock and the Common Stock. Such notice shall be sent at least 10 days prior to the record date or effective date for the event specified in such notice.

5. Mandatory Conversion.

5.1 Trigger Events. Upon either (a) the closing of the sale of shares of Common Stock to the public at a price per share of at least three times (3x) the Series A Original Issue Price (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization with respect to the Series A Preferred Stock), in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, resulting in at least \$50,000,000 of proceeds, net of the underwriting discount and commissions, to the Corporation (a “**Qualified IPO**”), or (b) the date and time, or the occurrence of an event, specified by vote or written consent of the Requisite Holders (the time of such closing or the date and time specified or the time of the event specified in such vote or written consent is referred to herein as the “**Mandatory Conversion Time**”), then (i) all outstanding shares of Preferred Stock shall automatically be converted into shares of Common Stock, at the then effective conversion rate as calculated pursuant to Section 4.1.1 and (ii) such shares may not be reissued by the Corporation.

5.2 Procedural Requirements. All holders of record of shares of Preferred Stock shall be sent written notice of the Mandatory Conversion Time and the place designated for mandatory conversion of all such shares of Preferred Stock pursuant to this Section 5. Such notice need not be sent in advance of the occurrence of the Mandatory Conversion Time. Upon receipt of such notice, each holder of shares of Preferred Stock in certificated form shall surrender his, her or its certificate or certificates for all such shares (or, if such holder alleges that such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation at the place designated in such notice. If so required by the Corporation, any certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or by his, her or its attorney duly authorized in writing. All rights with respect to the Preferred Stock converted pursuant to Section 5.1, including the rights, if any, to receive notices and vote (other than as a holder of Common Stock), will terminate at the Mandatory Conversion Time (notwithstanding the failure of the holder or holders thereof to surrender any certificates at or prior to such time), except only the rights of the holders thereof, upon surrender of any certificate or certificates of such holders (or lost certificate affidavit and agreement) therefor, to receive the items provided for in the next sentence of this Section 5.2. As soon as practicable after the Mandatory Conversion Time and, if applicable, the surrender of any certificate or certificates (or lost certificate affidavit and agreement) for Preferred Stock, the Corporation shall (a) issue and deliver to such holder, or to his, her or its nominees, a certificate or certificates for the number of full shares of Common Stock issuable on such conversion in accordance with the provisions hereof and (b) pay any declared but unpaid dividends on the shares of Preferred Stock converted. Such converted Preferred Stock shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such appropriate action (without the need for stockholder action) as may be necessary to reduce the authorized number of shares of Preferred Stock accordingly.

6. Redemption. Other than as set forth in Section 2.3.2(b), the Preferred Stock is not redeemable at the option of the holder or the Corporation.

7. Redeemed or Otherwise Acquired Shares. Any shares of Preferred Stock that are redeemed or otherwise acquired by the Corporation or any of its subsidiaries shall be automatically and immediately cancelled and retired and shall not be reissued, sold or transferred. Neither the Corporation nor any of its subsidiaries may exercise any voting or other rights granted to the holders of Preferred Stock following redemption, conversion or acquisition.

8. Waiver. Except as otherwise set forth herein or to the extent a separate class or series vote is required by applicable law, any of the rights, powers, preferences and other terms of the Preferred Stock set forth herein may be waived on behalf of all holders of Preferred Stock by the affirmative written consent or vote of the Requisite Holders (provided that such waiver of rights, powers, preference and/or other terms affects each series of Preferred Stock in the same manner); *provided* that a waiver of any provision expressly requiring the affirmative written consent or vote of a class or series of stock shall be waived by the affirmative written consent or vote of such class or series of stock.

9. Notices. Any notice required or permitted by the provisions of this Article Fourth to be given to a holder of shares of Preferred Stock shall be mailed, postage prepaid, to the post office address last shown on the records of the Corporation, or given by electronic communication in compliance with the provisions of the General Corporation Law, and shall be deemed sent upon such mailing or electronic transmission.

FIFTH: Subject to any additional vote required by this Second Amended and Restated Certificate of Incorporation or Bylaws, in furtherance and not in limitation of the powers conferred by statute, the Board of Directors is expressly authorized to make, repeal, alter, amend and rescind any or all of the Bylaws of the Corporation.

SIXTH: Subject to any additional vote required by this Second Amended and Restated Certificate of Incorporation, the number of directors of the Corporation shall be determined in the manner set forth in the Bylaws of the Corporation.

SEVENTH: Elections of directors need not be by written ballot unless the Bylaws of the Corporation shall so provide.

EIGHTH: Meetings of stockholders may be held within or without the State of Delaware, as the Bylaws of the Corporation may provide. The books of the Corporation may be kept outside the State of Delaware at such place or places as may be designated from time to time by the Board of Directors or in the Bylaws of the Corporation.

NINTH: To the fullest extent permitted by law, a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. If the General Corporation Law or any other law of the State of Delaware is amended after approval by the stockholders of this Article Ninth to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the General Corporation Law as so amended.

Any repeal or modification of the foregoing provisions of this Article Ninth by the stockholders of the Corporation shall not adversely affect any right or protection of a director of the Corporation existing at the time of, or increase the liability of any director of the Corporation with respect to any acts or omissions of such director occurring prior to, such repeal or modification.

TENTH: The following indemnification provisions shall apply to the persons enumerated below.

1. Right to Indemnification of Directors and Officers. The Corporation shall indemnify and hold harmless, to the fullest extent permitted by applicable law as it presently exists or may hereafter be amended, any person (an "**Indemnified Person**") who was or is made or is

threatened to be made a party or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (a “**Proceeding**”), by reason of the fact that such person, or a person for whom such person is the legal representative, is or was a director or officer of the Corporation or, while a director or officer of the Corporation, is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, limited liability company, trust, enterprise or nonprofit entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses (including attorneys’ fees) reasonably incurred by such Indemnified Person in such Proceeding. Notwithstanding the preceding sentence, except as otherwise provided in Section 3 of this Article Tenth the Corporation shall be required to indemnify an Indemnified Person in connection with a Proceeding (or part thereof) commenced by such Indemnified Person only if the commencement of such Proceeding (or part thereof) by the Indemnified Person was authorized in advance by the Board of Directors.

2. Prepayment of Expenses of Directors and Officers. The Corporation shall pay the expenses (including attorneys’ fees) incurred by an Indemnified Person in defending any Proceeding in advance of its final disposition, *provided, however*, that, to the extent required by law, such payment of expenses in advance of the final disposition of the Proceeding shall be made only upon receipt of an undertaking by the Indemnified Person to repay all amounts advanced if it should be ultimately determined that the Indemnified Person is not entitled to be indemnified under this Article Tenth or otherwise.

3. Claims by Directors and Officers. If a claim for indemnification or advancement of expenses under this Article Tenth is not paid in full within 30 days after a written claim therefor by the Indemnified Person has been received by the Corporation, the Indemnified Person may file suit to recover the unpaid amount of such claim and, if successful in whole or in part, shall be entitled to be paid the expense of prosecuting such claim. In any such action the Corporation shall have the burden of proving that the Indemnified Person is not entitled to the requested indemnification or advancement of expenses under applicable law.

4. Indemnification of Employees and Agents. The Corporation may indemnify and advance expenses to any person who was or is made or is threatened to be made or is otherwise involved in any Proceeding by reason of the fact that such person, or a person for whom such person is the legal representative, is or was an employee or agent of the Corporation or, while an employee or agent of the Corporation, is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, limited liability company, trust, enterprise or nonprofit entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses (including attorneys’ fees) reasonably incurred by such person in connection with such Proceeding. The ultimate determination of entitlement to indemnification of persons who are non-director or officer employees or agents shall be made in such manner as is determined by the Board of Directors in its sole discretion. Notwithstanding the foregoing sentence, the Corporation shall not be required to indemnify a person in connection with a Proceeding initiated by such person if the Proceeding was not authorized in advance by the Board of Directors.

5. Advancement of Expenses of Employees and Agents. The Corporation may pay the expenses (including attorneys’ fees) incurred by an employee or agent in defending any Proceeding in advance of its final disposition on such terms and conditions as may be determined by the Board of Directors.

6. Non-Exclusivity of Rights. The rights conferred on any person by this Article Tenth shall not be exclusive of any other rights which such person may have or hereafter acquire under any statute, provision of this Second Amended and Restated Certificate of Incorporation, the Bylaws of the Corporation, or any agreement, or pursuant to any vote of stockholders or disinterested directors or otherwise.

7. Other Indemnification. The Corporation's obligation, if any, to indemnify any person who was or is serving at its request as a director, officer or employee of another Corporation, partnership, limited liability company, joint venture, trust, organization or other enterprise shall be reduced by any amount such person may collect as indemnification from such other Corporation, partnership, limited liability company, joint venture, trust, organization or other enterprise.

8. Insurance. The Board of Directors may, to the full extent permitted by applicable law as it presently exists, or may hereafter be amended from time to time, authorize an appropriate officer or officers to purchase and maintain at the Corporation's expense insurance: (a) to indemnify the Corporation for any obligation which it incurs as a result of the indemnification of directors, officers and employees under the provisions of this Article Tenth; and (b) to indemnify or insure directors, officers and employees against liability in instances in which they may not otherwise be indemnified by the Corporation under the provisions of this Article Tenth.

9. Amendment or Repeal. Any repeal or modification of the foregoing provisions of this Article Tenth shall not adversely affect any right or protection hereunder of any person in respect of any act or omission occurring prior to the time of such repeal or modification. The rights provided hereunder shall inure to the benefit of any Indemnified Person and such person's heirs, executors and administrators.

ELEVENTH: The Corporation renounces, to the fullest extent permitted by law, any interest or expectancy of the Corporation in, or in being offered an opportunity to participate in, any Excluded Opportunity. An "Excluded Opportunity" is any matter, transaction or interest that is presented to, or acquired, created or developed by, or which otherwise comes into the possession of (i) any director of the Corporation who is not an employee of the Corporation or any of its subsidiaries, or (ii) any holder of Preferred Stock or any partner, member, director, stockholder, employee, affiliate or agent of any such holder, other than someone who is an employee of the Corporation or any of its subsidiaries (collectively, the persons referred to in clauses (i) and (ii) are "Covered Persons"), unless such matter, transaction or interest is presented to, or acquired, created or developed by, or otherwise comes into the possession of, a Covered Person expressly and solely in such Covered Person's capacity as a director of the Corporation. Any repeal or modification of this Article Eleventh will only be prospective and will not affect the rights under this Article Eleventh in effect at the time of the occurrence of any actions or omissions to act giving rise to liability. Notwithstanding anything to the contrary contained elsewhere in this Second Amended and Restated Certificate of Incorporation, the affirmative vote of the Requisite Holders will be required to amend or repeal, or to adopt any provisions inconsistent with this Article Eleventh.

TWELFTH: Unless the Corporation consents in writing to the selection of an alternative forum, the Court of Chancery in the State of Delaware shall be the sole and exclusive forum for any stockholder (including a beneficial owner) to bring (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of fiduciary duty owed by any director, officer or other employee of the Corporation to the Corporation or the Corporation's stockholders, (iii) any action asserting a claim against the

Corporation, its directors, officers or employees arising pursuant to any provision of the Delaware General Corporation Law or the Corporation's certificate of incorporation or bylaws or (iv) any action asserting a claim against the Corporation, its directors, officers or employees governed by the internal affairs doctrine, except for, as to each of (i) through (iv) above, any claim as to which the Court of Chancery determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within 10 days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery, or for which the Court of Chancery does not have subject matter jurisdiction. If any provision or provisions of this Article Twelfth shall be held to be invalid, illegal or unenforceable as applied to any person or entity or circumstance for any reason whatsoever, then, to the fullest extent permitted by law, the validity, legality and enforceability of such provisions in any other circumstance and of the remaining provisions of this Article Twelfth (including, without limitation, each portion of any sentence of this Article Twelfth containing any such provision held to be invalid, illegal or unenforceable that is not itself held to be invalid, illegal or unenforceable) and the application of such provision to other persons or entities and circumstances shall not in any way be affected or impaired thereby.

* * *

3. That the foregoing further amendment and restatement was approved by the holders of the requisite number of shares of this Corporation in accordance with Section 228 of the General Corporation Law.

4. That this Second Amended and Restated Certificate of Incorporation, which restates and further amends the provisions of this Corporation's Amended and Restated Certificate of Incorporation, has been duly adopted in accordance with Sections 242 and 245 of the General Corporation Law.

[Remainder of Page Intentionally Left Blank]

This Second Amended and Restated Certificate of Incorporation has been executed by a duly authorized officer of the Corporation on August 12, 2021.

By: /s/ Ivana Magovcevic-Liebisch
Ivana Magovcevic-Liebisch,
Executive Officer Chief

Signature Page to Second Amended and Restated Certificate of Incorporation of Vigil Neuroscience, Inc.

**THIRD AMENDED AND RESTATED
CERTIFICATE OF INCORPORATION
OF
VIGIL NEUROSCIENCE, INC.**

Vigil Neuroscience, Inc., a corporation organized and existing under the laws of the State of Delaware (the “Corporation”), hereby certifies as follows:

1. The name of the Corporation is Vigil Neuroscience, Inc. The date of the filing of its original Certificate of Incorporation with the Secretary of State of the State of Delaware was June 22, 2020 (the “Original Certificate”).
2. This Third Amended and Restated Certificate of Incorporation (the “Certificate”) amends, restates and integrates the provisions of the Second Amended and Restated Certificate of Incorporation that was filed with the Secretary of State of the State of Delaware on August 12, 2021 (the “Amended and Restated Certificate”), and was duly adopted in accordance with the provisions of Sections 228, 242 and 245 of the General Corporation Law of the State of Delaware (the “DGCL”).
3. The text of the Amended and Restated Certificate is hereby amended and restated in its entirety to provide as herein set forth in full.

ARTICLE I

The name of the Corporation is Vigil Neuroscience, Inc.

ARTICLE II

The address of the Corporation’s registered office in the State of Delaware is c/o COGENCY GLOBAL INC, 850 New Burton Road, Suite 201, City of Dover, County of Kent, 19904. The name of its registered agent at such address is COGENCY GLOBAL INC.

ARTICLE III

The purpose of the Corporation is to engage in any lawful act or activity for which corporations may be organized under the DGCL.

ARTICLE IV

CAPITAL STOCK

The total number of shares of capital stock which the Corporation shall have authority to issue is one hundred and sixty million 160,000,000, of which (i) one hundred and fifty million (150,000,000) shares shall be a class designated as common stock, par value \$0.0001 per share (the "Common Stock"), and (ii) ten million (10,000,000) shares shall be a class designated as undesignated preferred stock, par value \$0.0001 per share (the "Undesignated Preferred Stock").

Except as otherwise provided in any certificate of designations of any series of Undesignated Preferred Stock, the number of authorized shares of the class of Common Stock or Undesignated Preferred Stock may from time to time be increased or decreased (but not below the number of shares of such class outstanding) by the affirmative vote of the holders of a majority in voting power of the outstanding shares of capital stock of the Corporation irrespective of the provisions of Section 242(b)(2) of the DGCL.

The powers, preferences and rights of, and the qualifications, limitations and restrictions upon, each class or series of stock shall be determined in accordance with, or as set forth below in, this Article IV.

A. COMMON STOCK

Subject to all the rights, powers and preferences of the Undesignated Preferred Stock and except as provided by law or in this Certificate (or in any certificate of designations of any series of Undesignated Preferred Stock):

(a) the holders of the Common Stock shall have the exclusive right to vote for the election of directors of the Corporation (the "Directors") and on all other matters requiring stockholder action, each outstanding share entitling the holder thereof to one vote on each matter properly submitted to the stockholders of the Corporation for their vote; provided, however, that, except as otherwise required by law, holders of Common Stock, as such, shall not be entitled to vote on any amendment to this Certificate (or on any amendment to a certificate of designations of any series of Undesignated Preferred Stock) that alters or changes the powers, preferences, rights or other terms of one or more outstanding series of Undesignated Preferred Stock if the holders of such affected series of Undesignated Preferred Stock are entitled to vote, either separately or together with the holders of one or more other such series, on such amendment pursuant to this Certificate (or pursuant to a certificate of designations of any series of Undesignated Preferred Stock) or pursuant to the DGCL;

(b) dividends may be declared and paid or set apart for payment upon the Common Stock out of any assets or funds of the Corporation legally available for the payment of dividends, but only when and as declared by the Board of Directors or any authorized committee thereof; and

(c) upon the voluntary or involuntary liquidation, dissolution or winding up of the Corporation, the net assets of the Corporation shall be distributed pro rata to the holders of the Common Stock.

B. UNDESIGNATED PREFERRED STOCK

The Board of Directors or any authorized committee thereof is expressly authorized, to the fullest extent permitted by law, to provide by resolution or resolutions for, out of the unissued shares of Undesignated Preferred Stock, the issuance of the shares of Undesignated Preferred Stock in one or more series of such stock, and by filing a certificate of designations pursuant to applicable law of the State of Delaware, to establish or change from time to time the number of shares of each such series, and to fix the designations, powers, including voting powers, full or limited, or no voting powers, preferences and the relative, participating, optional or other special rights of the shares of each series and any qualifications, limitations and restrictions thereof.

ARTICLE V

STOCKHOLDER ACTION

1. Action without Meeting. Any action required or permitted to be taken by the stockholders of the Corporation at any annual or special meeting of stockholders of the Corporation must be effected at a duly called annual or special meeting of stockholders and may not be taken or effected by a written consent of stockholders in lieu thereof. Notwithstanding anything herein to the contrary, the affirmative vote of not less than two thirds (2/3) of the outstanding shares of capital stock entitled to vote thereon, and the affirmative vote of not less than two thirds (2/3) of the outstanding shares of each class entitled to vote thereon as a class, shall be required to amend or repeal any provision of this Article V, Section 1.

2. Special Meetings. Except as otherwise required by statute and subject to the rights, if any, of the holders of any series of Undesignated Preferred Stock, special meetings of the stockholders of the Corporation may be called only by the Board of Directors acting pursuant to a resolution approved by the affirmative vote of a majority of the Directors then in office, and special meetings of stockholders may not be called by any other person or persons. Only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders of the Corporation.

ARTICLE VI

DIRECTORS

1. General. The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors except as otherwise provided herein or required by law.

2. Election of Directors. Election of Directors need not be by written ballot unless the By-laws of the Corporation (the “By-laws”) shall so provide.

3. Number of Directors; Term of Office. The number of Directors of the Corporation shall be fixed solely and exclusively by resolution duly adopted from time to time by the Board of Directors. The Directors, other than those who may be elected by the holders of any series of Undesignated Preferred Stock, shall be classified, with respect to the term for which they severally hold office, into three classes. The initial Class I Directors of the Corporation shall be Clay Thorp, Shaan Gandhi and Gerhard Koenig; the initial Class II Directors of the Corporation shall be Stefan Vitorovic, and Cheryl Blanchard, and the initial Class III Directors of the Corporation shall be Bruce Booth, and Ivana Magovčević-Liebisch. The initial Class I Directors shall serve for a term expiring at the annual meeting of stockholders to be held in 2022, the initial Class II Directors shall serve for a term expiring at the annual meeting of stockholders to be held in 2023, and the initial Class III Directors shall serve for a term expiring at the annual meeting of stockholders to be held in 2024. The mailing address of each person who is to serve initially as a director is c/o Vigil Neuroscience, Inc., One Broadway, Suite 07-300, Cambridge, MA 02142. At each annual meeting of stockholders, Directors elected to succeed those Directors whose terms expire shall be elected for a term of office to expire at the third succeeding annual meeting of stockholders after their election. Notwithstanding the foregoing, the Directors elected to each class shall hold office until their successors are duly elected and qualified or until their earlier resignation, death or removal.

Notwithstanding the foregoing, whenever, pursuant to the provisions of Article IV of this Certificate, the holders of any one or more series of Undesignated Preferred Stock shall have the right, voting separately as a series or together with holders of other such series, to elect Directors at an annual or special meeting of stockholders, the election, term of office, filling of vacancies and other features of such directorships shall be governed by the terms of this Certificate and any certificate of designations applicable to such series.

Notwithstanding anything herein to the contrary, the affirmative vote of not less than two thirds (2/3) of the outstanding shares of capital stock entitled to vote thereon, and the affirmative vote of not less than two thirds (2/3) of the outstanding shares of each class entitled to vote thereon as a class, shall be required to amend or repeal any provision of this Article VI, Section 3.

4. Vacancies. Subject to the rights, if any, of the holders of any series of Undesignated Preferred Stock to elect Directors and to fill vacancies in the Board of Directors relating thereto, any and all vacancies in the Board of Directors, however occurring, including, without limitation, by reason of an increase in the size of the Board of Directors, or the death, resignation, disqualification or removal of a Director, shall be filled solely and exclusively by the affirmative vote of a majority of the remaining Directors then in office, even if less than a quorum of the Board of Directors, and not by the stockholders. Any Director appointed in accordance with the preceding sentence shall hold office for the remainder of the full term of the class of Directors in which the new directorship was created or the vacancy occurred and until such Director’s successor shall have been duly elected and qualified or until his or her earlier resignation, death or removal. Subject to the rights, if any, of the holders of any series of

Undesignated Preferred Stock to elect Directors, when the number of Directors is increased or decreased, the Board of Directors shall, subject to Article VI, Section 3 hereof, determine the class or classes to which the increased or decreased number of Directors shall be apportioned; provided, however, that no decrease in the number of Directors shall shorten the term of any incumbent Director. In the event of a vacancy in the Board of Directors, the remaining Directors, except as otherwise provided by law, shall exercise the powers of the full Board of Directors until the vacancy is filled.

5. Removal. Subject to the rights, if any, of any series of Undesignated Preferred Stock to elect Directors and to remove any Director whom the holders of any such series have the right to elect, any Director (including persons elected by Directors to fill vacancies in the Board of Directors) may be removed from office (i) only with cause and (ii) only by the affirmative vote of the holders of not less than two thirds (2/3) of the outstanding shares of capital stock then entitled to vote at an election of Directors. At least forty-five (45) days prior to any annual or special meeting of stockholders at which it is proposed that any Director be removed from office, written notice of such proposed removal and the alleged grounds thereof shall be sent to the Director whose removal will be considered at the meeting.

ARTICLE VII

LIMITATION OF LIABILITY

A Director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of his or her fiduciary duty as a Director, except for liability (a) for any breach of the Director's duty of loyalty to the Corporation or its stockholders, (b) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (c) under Section 174 of the DGCL or (d) for any transaction from which the Director derived an improper personal benefit. If the DGCL is amended after the effective date of this Certificate to authorize corporate action further eliminating or limiting the personal liability of Directors, then the liability of a Director of the Corporation shall be eliminated or limited to the fullest extent permitted by the DGCL, as so amended.

Any amendment, repeal or modification of this Article VII by either of (i) the stockholders of the Corporation or (ii) an amendment to the DGCL, shall not adversely affect any right or protection existing at the time of such amendment, repeal or modification with respect to any acts or omissions occurring before such amendment, repeal or modification of a person serving as a Director at the time of such amendment, repeal or modification.

Notwithstanding anything herein to the contrary, the affirmative vote of not less than two thirds (2/3) of the outstanding shares of capital stock entitled to vote thereon, and the affirmative vote of not less than two thirds (2/3) of the outstanding shares of each class entitled to vote thereon as a class, shall be required to amend or repeal any provision of this Article VII.

ARTICLE VIII

AMENDMENT OF BY-LAWS

1. Amendment by Directors. Except as otherwise provided by law, the By-laws of the Corporation may be amended or repealed by the Board of Directors by the affirmative vote of a majority of the Directors then in office.
2. Amendment by Stockholders. Except as otherwise provided therein, the By-laws of the Corporation may be amended or repealed at any annual meeting of stockholders, or special meeting of stockholders called for such purpose, by the affirmative vote of not less than two thirds (2/3) of the outstanding shares of capital stock entitled to vote on such amendment or repeal, voting together as a single class.

ARTICLE IX

AMENDMENT OF CERTIFICATE OF INCORPORATION

The Corporation reserves the right to amend or repeal this Certificate in the manner now or hereafter prescribed by statute and this Certificate, and all rights conferred upon stockholders herein are granted subject to this reservation. Except as otherwise required by this Certificate or by law, whenever any vote of the holders of capital stock of the Corporation is required to amend or repeal any provision of this Certificate, such amendment or repeal shall require the affirmative vote of the majority of the outstanding shares of capital stock entitled to vote on such amendment or repeal, and the affirmative vote of the majority of the outstanding shares of each class entitled to vote thereon as a class, at a duly constituted meeting of stockholders called expressly for such purpose.

[End of Text]

THIS THIRD AMENDED AND RESTATED CERTIFICATE OF INCORPORATION is executed as of this __ day of January 2022.

VIGIL NEUROSCIENCE, INC.

By: _____

Name: Ivana Magovčević-Liebisch

Title: President and Chief Executive Officer

AMENDED AND RESTATED
BYLAWS
OF
VIGIL NEUROSCIENCE, INC.

(the "Corporation")

ARTICLE I

Stockholders

SECTION 1. Annual Meeting. The annual meeting of stockholders (any such meeting being referred to in these Bylaws as an "Annual Meeting") shall be held at the hour, date and place within or without the United States which is fixed by the Board of Directors, which time, date and place may subsequently be changed at any time by vote of the Board of Directors. If no Annual Meeting has been held for a period of thirteen (13) months after the Corporation's last Annual Meeting, a special meeting in lieu thereof may be held, and such special meeting shall have, for the purposes of these Bylaws or otherwise, all the force and effect of an Annual Meeting. Any and all references hereafter in these Bylaws to an Annual Meeting or Annual Meetings also shall be deemed to refer to any special meeting(s) in lieu thereof.

SECTION 2. Notice of Stockholder Business and Nominations.

(a) Annual Meetings of Stockholders.

(1) Nominations of persons for election to the Board of Directors of the Corporation and the proposal of other business to be considered by the stockholders may be brought before an Annual Meeting (i) by or at the direction of the Board of Directors or (ii) by any stockholder of the Corporation who was a stockholder of record at the time of giving of notice provided for in this Bylaw, who is entitled to vote at the meeting, who is present (in person or by proxy) at the meeting and who complies with the notice procedures set forth in this Bylaw as to such nomination or business. For the avoidance of doubt, the foregoing clause (ii) shall be the exclusive means for a stockholder to bring nominations or business properly before an Annual Meeting (other than matters properly brought under Rule 14a-8 (or any successor rule) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")), and such stockholder must comply with the notice and other procedures set forth in Article I, Section 2(a)(2) and (3) of this Bylaw to bring such nominations or business properly before an Annual Meeting. In addition to the other requirements set forth in this Bylaw, for any proposal of business to be considered at an Annual Meeting, it must be a proper subject for action by stockholders of the Corporation under Delaware law.

(2) For nominations or other business to be properly brought before an Annual Meeting by a stockholder pursuant to clause (ii) of Article I, Section 2(a)(1) of this Bylaw, the stockholder must (i) have given Timely Notice (as defined below) thereof in writing to the Secretary of the Corporation, (ii) have provided any updates or supplements to such notice at the times and in the forms required by this Bylaw and (iii) together with the beneficial owner(s), if any, on whose behalf the nomination or business proposal is made, have acted in accordance with the representations set forth in the Solicitation Statement (as defined below) required by this Bylaw. To be timely, a stockholder's written notice shall be received by the Secretary at the principal executive offices of the Corporation not later than the close of business on the ninetieth (90th) day nor earlier than the close of business on the one hundred twentieth (120th) day prior to the one-year anniversary of the preceding year's Annual Meeting; provided, however, that in the event the Annual Meeting is first convened more than thirty (30) days before or more than sixty (60) days after such anniversary date, or if no Annual Meeting were held in the preceding year, notice by the stockholder to be timely must be received by the Secretary of the Corporation not later than the close of business on the later of the ninetieth (90th) day prior to the scheduled date of such Annual Meeting or the tenth (10th) day following the day on which public announcement of the date of such meeting is first made (such notice within such time periods shall be referred to as "Timely Notice"). Notwithstanding anything to the contrary provided herein, for the first Annual Meeting following the initial public offering of common stock of the Corporation, a stockholder's notice shall be timely if received by the Secretary at the principal executive offices of the Corporation not later than the close of business on the later of the ninetieth (90th) day prior to the scheduled date of such Annual Meeting or the tenth (10th) day following the day on which public announcement of the date of such Annual Meeting is first made or sent by the Corporation. Such stockholder's Timely Notice shall set forth:

(A) as to each person whom the stockholder proposes to nominate for election or reelection as a director, (i) the name, age, business address and residence address of the nominee, (ii) the principal occupation or employment of the nominee, (iii) the class and number of shares of the corporation that are held of record or are beneficially owned by the nominee and any derivative positions held or beneficially held by the nominee, (iv) whether and the extent to which any hedging or other transaction or series of transactions has been entered into by or on behalf of the nominee with respect to any securities of the corporation, and a description of any other agreement, arrangement or understanding (including any short position or any borrowing or lending of shares), the effect or intent of which is to mitigate loss to, or to manage the risk or benefit of share price changes for, or to increase or decrease the voting power of the nominee, (v) a description of all arrangements or understandings between or among the stockholder and each nominee and any other person or persons (naming such person or persons) pursuant to which the nominations are to be made by the stockholder or concerning the nominee's potential service on the Board of Directors, (vi) a written statement executed by the nominee acknowledging that as a director of the corporation, the nominee will owe fiduciary duties under Delaware law with respect to the corporation and its stockholders, and (vii) all information relating to such person that is required to be disclosed in solicitations of proxies for election of directors in an election contest, or is otherwise required, in each case pursuant to Regulation 14A under the Exchange Act (including such person's written consent to being named in the proxy statement as a nominee and to serving as a director if elected);

(B) as to any other business that the stockholder proposes to bring before the meeting, a brief description of the business desired to be brought before the meeting, the reasons for conducting such business at the meeting, the text, if any, of any resolutions or Bylaw amendment proposed for adoption, and any material interest in such business of each Proposing Person (as defined below);

(C) (i) the name and address of the stockholder giving the notice, as they appear on the Corporation's books, and the names and addresses of the other Proposing Persons (if any) and (ii) as to each Proposing Person, the following information: (a) the class or series and number of all shares of capital stock of the Corporation which are, directly or indirectly, owned beneficially or of record by such Proposing Person or any of its affiliates or associates (as such terms are defined in Rule 12b-2 promulgated under the Exchange Act), including any shares of any class or series of capital stock of the Corporation as to which such Proposing Person or any of its affiliates or associates has a right to acquire beneficial ownership at any time in the future, (b) all Synthetic Equity Interests (as defined below) in which such Proposing Person or any of its affiliates or associates, directly or indirectly, holds an interest including a description of the material terms of each such Synthetic Equity Interest, including without limitation, identification of the counterparty to each such Synthetic Equity Interest and disclosure, for each such Synthetic Equity Interest, as to (x) whether or not such Synthetic Equity Interest conveys any voting rights, directly or indirectly, in such shares to such Proposing Person, (y) whether or not such Synthetic Equity Interest is required to be, or is capable of being, settled through delivery of such shares and (z) whether or not such Proposing Person and/or, to the extent known, the counterparty to such Synthetic Equity Interest has entered into other transactions that hedge or mitigate the economic effect of such Synthetic Equity Interest, (c) any proxy (other than a revocable proxy given in response to a public proxy solicitation made pursuant to, and in accordance with, the Exchange Act), agreement, arrangement, understanding or relationship pursuant to which such Proposing Person has or shares a right to, directly or indirectly, vote any shares of any class or series of capital stock of the Corporation, (d) any rights to dividends or other distributions on the shares of any class or series of capital stock of the Corporation, directly or indirectly, owned beneficially by such Proposing Person that are separated or separable from the underlying shares of the Corporation, and (e) any performance-related fees (other than an asset based fee) that such Proposing Person, directly or indirectly, is entitled to based on any increase or decrease in the value of shares of any class or series of capital stock of the Corporation or any Synthetic Equity Interests (the disclosures to be made pursuant to the foregoing clauses (a) through (e) are referred to, collectively, as "Material Ownership Interests") and (iii) a description of the material terms of all agreements, arrangements or understandings (whether or not in writing) entered into by any Proposing Person or any of its affiliates or associates with any other person for the purpose of acquiring, holding, disposing or voting of any shares of any class or series of capital stock of the Corporation;

(D) (i) a description of all agreements, arrangements or understandings by and among any of the Proposing Persons, or by and among any Proposing Persons and any other person (including with any proposed nominee(s)), pertaining to the nomination(s), or other business proposed to be brought before the meeting of stockholders (which description shall identify the name of each other person who is party to such an agreement, arrangement or understanding), and (ii) identification of the names and addresses of other stockholders (including beneficial owners) known by any of the Proposing Persons to support such nominations or other business proposal(s), and to the extent known the class and number of all shares of the Corporation's capital stock owned beneficially or of record by such other stockholder(s) or other beneficial owner(s); and

(E) a statement whether or not the stockholder giving the notice and/or the other Proposing Person(s), if any, will deliver a proxy statement and form of proxy to holders of, in the case of a business proposal, at least the percentage of voting power of all of the shares of capital stock of the Corporation required under applicable law to approve the proposal or, in the case of a nomination or nominations, at least the percentage of voting power of all of the shares of capital stock of the Corporation reasonably believed by such Proposing Person to be sufficient to elect the nominee or nominees proposed to be nominated by such stockholder (such statement, the "Solicitation Statement").

For purposes of this Article I of these Bylaws, the term "Proposing Person" shall mean the following persons: (i) the stockholder of record providing the notice of nominations or business proposed to be brought before a stockholders' meeting, and (ii) the beneficial owner(s), if different, on whose behalf the nominations or business proposed to be brought before a stockholders' meeting is made. For purposes of this Section 2 of Article I of these Bylaws, the term "Synthetic Equity Interest" shall mean any transaction, agreement or arrangement (or series of transactions, agreements or arrangements), including, without limitation, any derivative, swap, hedge, repurchase or so-called "stock borrowing" agreement or arrangement, the purpose or effect of which is to, directly or indirectly: (a) give a person or entity economic benefit and/or risk similar to ownership of shares of any class or series of capital stock of the Corporation, in whole or in part, including due to the fact that such transaction, agreement or arrangement provides, directly or indirectly, the opportunity to profit or avoid a loss from any increase or decrease in the value of any shares of any class or series of capital stock of the Corporation, (b) mitigate loss to, reduce the economic risk of or manage the risk of share price changes for, any person or entity with respect to any shares of any class or series of capital stock of the Corporation, (c) otherwise provide in any manner the opportunity to profit or avoid a loss from any decrease in the value of any shares of any class or series of capital stock of the Corporation, or (d) increase or decrease the voting power of any person or entity with respect to any shares of any class or series of capital stock of the Corporation.

(3) A stockholder providing Timely Notice of nominations or business proposed to be brought before an Annual Meeting shall further update and supplement such notice, if necessary, so that the information (including, without limitation, the Material Ownership Interests information) provided or required to be provided in such notice pursuant to this Bylaw shall be true and correct as of the record date for the meeting and as of the date that is ten (10) business days prior to such Annual Meeting, and such update and supplement shall be received by the Secretary at the principal executive offices of the Corporation not later than the close of business on the fifth (5th) business day after the record date for the Annual Meeting (in the case of the update and supplement required to be made as of the record date), and not later than the close of business on the eighth (8th) business day prior to the date of the Annual Meeting (in the case of the update and supplement required to be made as of ten (10) business days prior to the meeting).

(4) Notwithstanding anything in the second sentence of Article I, Section 2(a)(2) of this Bylaw to the contrary, in the event that the number of directors to be elected to the Board of Directors of the Corporation is increased and there is no public announcement naming all of the nominees for director or specifying the size of the increased Board of Directors made by the Corporation at least ten (10) days before the last day a stockholder may deliver a notice of nomination in accordance with the second sentence of Article I, Section 2(a)(2), a stockholder's notice required by this Bylaw shall also be considered timely, but only with respect to nominees for any new positions created by such increase, if it shall be received by the Secretary of the Corporation not later than the close of business on the tenth (10th) day following the day on which such public announcement is first made by the Corporation.

(b) General.

(1) Only such persons who are nominated in accordance with the provisions of this Bylaw shall be eligible for election and to serve as directors and only such business shall be conducted at an Annual Meeting as shall have been brought before the meeting in accordance with the provisions of this Bylaw or in accordance with Rule 14a-8 under the Exchange Act. The Board of Directors or a designated committee thereof shall have the power to determine whether a nomination or any business proposed to be brought before the meeting was made in accordance with the provisions of this Bylaw. If neither the Board of Directors nor such designated committee makes a determination as to whether any stockholder proposal or nomination was made in accordance with the provisions of this Bylaw, the presiding officer of the Annual Meeting shall have the power and duty to determine whether the stockholder proposal or nomination was made in accordance with the provisions of this Bylaw. If the Board of Directors or a designated committee thereof or the presiding officer, as applicable, determines that any stockholder proposal or nomination was not made in accordance with the provisions of this Bylaw, such proposal or nomination shall be disregarded and shall not be presented for action at the Annual Meeting.

(2) Except as otherwise required by law, nothing in this Article I, Section 2 shall obligate the Corporation or the Board of Directors to include in any proxy statement or other stockholder communication distributed on behalf of the Corporation or the Board of Directors information with respect to any nominee for director or any other matter of business submitted by a stockholder.

(3) Notwithstanding the foregoing provisions of this Article I, Section 2, if the nominating or proposing stockholder (or a qualified representative of the stockholder) does not appear at the Annual Meeting to present a nomination or any business, such nomination or business shall be disregarded, notwithstanding that proxies in respect of such vote may have been received by the Corporation. For purposes of this Article I, Section 2, to be considered a qualified representative of the proposing stockholder, a person must be authorized by a written instrument executed by such stockholder or an electronic transmission delivered by such stockholder to act for such stockholder as proxy at the meeting of stockholders and such person must produce such written instrument or electronic transmission, or a reliable reproduction of the written instrument or electronic transmission, to the presiding officer at the meeting of stockholders.

(4) For purposes of this Bylaw, "public announcement" shall mean disclosure in a press release reported by the Dow Jones News Service, Associated Press or comparable national news service or in a document publicly filed by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the Exchange Act.

(5) Notwithstanding the foregoing provisions of this Bylaw, a stockholder shall also comply with all applicable requirements of the Exchange Act and the rules and regulations thereunder with respect to the matters set forth in this Bylaw. Nothing in this Bylaw shall be deemed to affect any rights of (i) stockholders to have proposals included in the Corporation's proxy statement pursuant to Rule 14a-8 (or any successor rule), as applicable, under the Exchange Act and, to the extent required by such rule, have such proposals considered and voted on at an Annual Meeting or (ii) the holders of any series of Undesignated Preferred Stock to elect directors under specified circumstances.

(c) Notwithstanding anything herein to the contrary, the affirmative vote of not less than two thirds (2/3) of the outstanding shares of capital stock entitled to vote thereon, and the affirmative vote of not less than two thirds (2/3) of the outstanding shares of each class entitled to vote thereon as a class, shall be required to amend or repeal any provision of this Article I, Section 2; provided, however, that if the Board of Directors recommends that stockholders approve such amendment or repeal at such meeting of stockholders, such amendment or repeal shall only require the affirmative vote of a majority of the outstanding shares entitled to vote on such amendment or repeal, voting together as a single class.

SECTION 3. Special Meetings. Except as otherwise required by statute and subject to the rights, if any, of the holders of any series of Undesignated Preferred Stock, special meetings of the stockholders of the Corporation may be called only by the Board of Directors acting pursuant to a resolution approved by the affirmative vote of a majority of the Directors then in office. The Board of Directors may postpone or reschedule any previously scheduled special meeting of stockholders. Only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders of the Corporation. Nominations

of persons for election to the Board of Directors of the Corporation and stockholder proposals of other business shall not be brought before a special meeting of stockholders to be considered by the stockholders unless such special meeting is held in lieu of an annual meeting of stockholders in accordance with Article I, Section 1 of these Bylaws, in which case such special meeting in lieu thereof shall be deemed an Annual Meeting for purposes of these Bylaws and the provisions of Article I, Section 2 of these Bylaws shall govern such special meeting.

Notwithstanding anything herein to the contrary, the affirmative vote of not less than two thirds (2/3) of the outstanding shares of capital stock entitled to vote thereon, and the affirmative vote of not less than two thirds (2/3) of the outstanding shares of each class entitled to vote thereon as a class, shall be required to amend or repeal any provision of this Article I, Section 3; provided, however, that if the Board of Directors recommends that stockholders approve such amendment or repeal at such meeting of stockholders, such amendment or repeal shall only require the affirmative vote of a majority of the outstanding shares entitled to vote on such amendment or repeal, voting together as a single class.

SECTION 4. Notice of Meetings; Adjournments.

(a) A notice of each Annual Meeting stating the hour, date and place, if any, of such Annual Meeting and the means of remote communication, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such meeting, shall be given not less than ten (10) days nor more than sixty (60) days before the Annual Meeting, to each stockholder entitled to vote thereat by delivering such notice to such stockholder or by mailing it, postage prepaid, addressed to such stockholder at the address of such stockholder as it appears on the Corporation's stock transfer books. Without limiting the manner by which notice may otherwise be given to stockholders, any notice to stockholders may be given by electronic transmission in the manner provided in Section 232 of the Delaware General Corporation Law ("DGCL").

(b) Unless otherwise required by the DGCL, notice of all special meetings of stockholders shall be given in the same manner as provided for Annual Meetings, except that the notice of all special meetings shall state the purpose or purposes for which the meeting has been called.

(c) Notice of an Annual Meeting or special meeting of stockholders need not be given to a stockholder if a waiver of notice is executed, or waiver of notice by electronic transmission is provided, before or after such meeting by such stockholder or if such stockholder attends such meeting, unless such attendance is for the express purpose of objecting at the beginning of the meeting to the transaction of any business because the meeting was not lawfully called or convened.

(d) The Board of Directors may postpone and reschedule any previously scheduled Annual Meeting or special meeting of stockholders and any record date with respect thereto, regardless of whether any notice or public disclosure with respect to any such meeting has been sent or made pursuant to Section 2 of this Article I of these Bylaws or otherwise. In no event shall the public announcement of an adjournment, postponement or rescheduling of any previously scheduled meeting of stockholders commence a new time period for the giving of a stockholder's notice under this Article I of these Bylaws.

(e) When any meeting is convened, the presiding officer may adjourn the meeting if (i) no quorum is present for the transaction of business, (ii) the Board of Directors determines that adjournment is necessary or appropriate to enable the stockholders to consider fully information which the Board of Directors determines has not been made sufficiently or timely available to stockholders, or (iii) the Board of Directors determines that adjournment is otherwise in the best interests of the Corporation. When any Annual Meeting or special meeting of stockholders is adjourned to another hour, date or place, notice need not be given of the adjourned meeting other than an announcement at the meeting at which the adjournment is taken of the hour, date and place, if any, to which the meeting is adjourned and the means of remote communications, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such adjourned meeting; provided, however, that if the adjournment is for more than thirty (30) days from the meeting date, or if after the adjournment a new record date is fixed for the adjourned meeting, notice of the adjourned meeting and the means of remote communications, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such adjourned meeting shall be given to each stockholder of record entitled to vote thereat and each stockholder who, by law or under the Third Amended and Restated Certificate of Incorporation of the Corporation (as the same may hereafter be amended and/or restated, the "Certificate") or these Bylaws, is entitled to such notice.

SECTION 5. Quorum. A majority of the outstanding shares entitled to vote, present in person or represented by proxy, shall constitute a quorum at any meeting of stockholders. If less than a quorum is present at a meeting, the holders of voting stock representing a majority of the voting power present at the meeting or the presiding officer may adjourn the meeting from time to time, and the meeting may be held as adjourned without further notice, except as provided in Section 4 of this Article I. At such adjourned meeting at which a quorum is present, any business may be transacted which might have been transacted at the original meeting. The stockholders present at a duly constituted meeting may continue to transact business until adjournment, notwithstanding the withdrawal of enough stockholders to leave less than a quorum.

SECTION 6. Voting and Proxies. Stockholders shall have one vote for each share of stock entitled to vote owned by them of record according to the stock ledger of the Corporation as of the record date, unless otherwise provided by law or by the Certificate. Stockholders may vote either (i) in person, (ii) by written proxy or (iii) by a transmission permitted by Section 212(c) of the DGCL. Any copy, facsimile telecommunication or other reliable reproduction of the writing or transmission permitted by Section 212(c) of the DGCL may be substituted for or used in lieu of the original writing or transmission for any and all purposes for which the original writing or transmission could be used, provided that such copy, facsimile telecommunication or other reproduction shall be a complete reproduction of the entire original writing or transmission. Proxies shall be filed in accordance with the procedures established for the meeting of stockholders. Except as otherwise limited therein or as otherwise provided by law, proxies authorizing a person to vote at a specific meeting shall entitle the persons authorized thereby to vote at any adjournment of such meeting, but they shall not be valid after final adjournment of such meeting. A proxy with respect to stock held in the name of two or more persons shall be valid if executed by or on behalf of any one of them unless at or prior to the exercise of the proxy the Corporation receives a specific written notice to the contrary from any one of them.

SECTION 7. Action at Meeting. When a quorum is present at any meeting of stockholders, any matter before any such meeting (other than an election of a director or directors) shall be decided by a majority of the votes properly cast for and against such matter, except where a larger vote is required by law, by the Certificate or by these Bylaws. Any election of directors by stockholders shall be determined by a plurality of the votes properly cast on the election of directors.

SECTION 8. Stockholder Lists. The Secretary or an Assistant Secretary (or the Corporation's transfer agent or other person authorized by these Bylaws or by law) shall prepare and make, at least ten (10) days before every Annual Meeting or special meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for a period of at least ten (10) days prior to the meeting as provided in the manner, and subject to the terms, set forth in Section 219 of the DGCL (or any successor provision). The list shall also be open to the examination of any stockholder during the whole time of the meeting as provided by law.

SECTION 9. Presiding Officer. The Board of Directors shall designate a representative to preside over all Annual Meetings or special meetings of stockholders, provided that if the Board of Directors does not so designate such a presiding officer, then the Chairman of the Board, if one is elected, shall preside over such meetings. If the Board of Directors does not so designate such a presiding officer and there is no Chairman of the Board or the Chairman of the Board is unable to so preside or is absent, then the Chief Executive Officer, if one is elected, shall preside over such meetings, provided further that if there is no Chief Executive Officer or the Chief Executive Officer is unable to so preside or is absent, then the President shall preside over such meetings. The presiding officer at any Annual Meeting or special meeting of stockholders shall have the power, among other things, to adjourn such meeting at any time and from time to time, subject to Sections 4 and 5 of this Article I. The order of business and all other matters of procedure at any meeting of the stockholders shall be determined by the presiding officer.

SECTION 10. Inspectors of Elections. The Corporation shall, in advance of any meeting of stockholders, appoint one or more inspectors to act at the meeting and make a written report thereof. The Corporation may designate one or more persons as alternate inspectors to replace any inspector who fails to act. If no inspector or alternate is able to act at a meeting of stockholders, the presiding officer shall appoint one or more inspectors to act at the meeting. Any inspector may, but need not, be an officer, employee or agent of the Corporation. Each inspector, before entering upon the discharge of his or her duties, shall take and sign an oath faithfully to execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspectors shall perform such duties as are required by the DGCL,

including the counting of all votes and ballots. The inspectors may appoint or retain other persons or entities to assist the inspectors in the performance of the duties of the inspectors. The presiding officer may review all determinations made by the inspectors, and in so doing the presiding officer shall be entitled to exercise his or her sole judgment and discretion and he or she shall not be bound by any determinations made by the inspectors. All determinations by the inspectors and, if applicable, the presiding officer, shall be subject to further review by any court of competent jurisdiction.

ARTICLE II

Directors

SECTION 1. Powers. The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors except as otherwise provided by the Certificate or required by law.

SECTION 2. Number and Terms. The number of directors of the Corporation shall be fixed solely and exclusively by resolution duly adopted from time to time by the Board of Directors. The directors shall hold office in the manner provided in the Certificate.

SECTION 3. Qualification. No director need be a stockholder of the Corporation.

SECTION 4. Vacancies. Vacancies in the Board of Directors shall be filled in the manner provided in the Certificate.

SECTION 5. Removal. Directors may be removed from office only in the manner provided in the Certificate.

SECTION 6. Resignation. A director may resign at any time by electronic transmission or by giving written notice to the Chairman of the Board, if one is elected, the President or the Secretary. A resignation shall be effective upon receipt, unless the resignation otherwise provides.

SECTION 7. Regular Meetings. The regular annual meeting and other regular meetings of the Board of Directors may be held at such hour, date and place as the Board of Directors may by resolution from time to time determine and publicize by means of reasonable notice given to any director who is not present at the meeting at which such resolution is adopted.

SECTION 8. Special Meetings. Special meetings of the Board of Directors may be called, orally or in writing, by or at the request of a majority of the directors, the Chairman of the Board, if one is elected, or the President. The person calling any such special meeting of the Board of Directors may fix the hour, date and place thereof.

SECTION 9. Notice of Meetings. Notice of the hour, date and place of all special meetings of the Board of Directors shall be given to each director by the Secretary or an Assistant Secretary, or in case of the death, absence, incapacity or refusal of such persons, by the Chairman of the Board, if one is elected, or the President or such other officer designated by the Chairman of the Board, if one is elected, or the President. Notice of any special meeting of the Board of Directors shall be given to each director in person, by telephone, or by facsimile, electronic mail or other form of electronic communication, sent to his or her business or home address, at least twenty-four (24) hours in advance of the meeting, or by written notice mailed to his or her business or home address, at least forty-eight (48) hours in advance of the meeting. Such notice shall be deemed to be delivered when hand-delivered to such address, read to such director by telephone, deposited in the mail so addressed, with postage thereon prepaid if mailed, dispatched or transmitted if sent by facsimile transmission or by electronic mail or other form of electronic communications. A written waiver of notice signed or electronically transmitted before or after a meeting by a director and filed with the records of the meeting shall be deemed to be equivalent to notice of the meeting. The attendance of a director at a meeting shall constitute a waiver of notice of such meeting, except where a director attends a meeting for the express purpose of objecting at the beginning of the meeting to the transaction of any business because such meeting is not lawfully called or convened. Except as otherwise required by law, by the Certificate or by these Bylaws, neither the business to be transacted at, nor the purpose of, any meeting of the Board of Directors need be specified in the notice or waiver of notice of such meeting.

SECTION 10. Quorum. At any meeting of the Board of Directors, a majority of the total number of directors shall constitute a quorum for the transaction of business, but if less than a quorum is present at a meeting, a majority of the directors present may adjourn the meeting from time to time, and the meeting may be held as adjourned without further notice. Any business which might have been transacted at the meeting as originally noticed may be transacted at such adjourned meeting at which a quorum is present. For purposes of this section, the total number of directors includes any unfilled vacancies on the Board of Directors.

SECTION 11. Action at Meeting. At any meeting of the Board of Directors at which a quorum is present, the vote of a majority of the directors present shall constitute action by the Board of Directors, unless otherwise required by law, by the Certificate or by these Bylaws.

SECTION 12. Action by Consent. Any action required or permitted to be taken at any meeting of the Board of Directors may be taken without a meeting if all members of the Board of Directors consent thereto in writing or by electronic transmission and the writing or writings or electronic transmission or transmissions are filed with the records of the meetings of the Board of Directors. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form. Such consent shall be treated as a resolution of the Board of Directors for all purposes.

SECTION 13. Manner of Participation. Directors may participate in meetings of the Board of Directors by means of conference telephone or other communications equipment by means of which all directors participating in the meeting can hear each other, and participation in a meeting in accordance herewith shall constitute presence in person at such meeting for purposes of these Bylaws.

SECTION 14. Presiding Director. The Board of Directors shall designate a representative to preside over all meetings of the Board of Directors, provided that if the Board of Directors does not so designate such a presiding director or such designated presiding director is unable to so preside or is absent, then the Chairman of the Board, if one is elected, shall preside over all meetings of the Board of Directors. If both the designated presiding director, if one is so designated, and the Chairman of the Board, if one is elected, are unable to preside or are absent, the Board of Directors shall designate an alternate representative to preside over a meeting of the Board of Directors.

SECTION 15. Committees. The Board of Directors, by vote of a majority of the directors then in office, may elect one or more committees, including, without limitation, a Compensation Committee, a Nominating & Corporate Governance Committee and an Audit Committee, and may delegate thereto some or all of its powers except those which by law, by the Certificate or by these Bylaws may not be delegated. Except as the Board of Directors may otherwise determine, any such committee may make rules for the conduct of its business, but unless otherwise provided by the Board of Directors or in such rules, its business shall be conducted so far as possible in the same manner as is provided by these Bylaws for the Board of Directors. All members of such committees shall hold such offices at the pleasure of the Board of Directors. The Board of Directors may abolish any such committee at any time. Any committee to which the Board of Directors delegates any of its powers or duties shall keep records of its meetings and shall report its action to the Board of Directors.

SECTION 16. Compensation of Directors. Directors shall receive such compensation for their services as shall be determined by a majority of the Board of Directors, or a designated committee thereof, provided that directors who are serving the Corporation as employees and who receive compensation for their services as such, shall not receive any salary or other compensation for their services as directors of the Corporation.

ARTICLE III

Officers

SECTION 1. Enumeration. The officers of the Corporation shall consist of a President, a Treasurer, a Secretary and such other officers, including, without limitation, a Chairman of the Board of Directors, a Chief Executive Officer and one or more Vice Presidents (including Executive Vice Presidents or Senior Vice Presidents), Assistant Vice Presidents, Assistant Treasurers and Assistant Secretaries, as the Board of Directors may determine.

SECTION 2. Election. At the regular annual meeting of the Board of Directors following the Annual Meeting, the Board of Directors shall elect the President, the Treasurer and the Secretary. Other officers may be elected by the Board of Directors at such regular annual meeting of the Board of Directors or at any other regular or special meeting.

SECTION 3. Qualification. No officer need be a stockholder or a director. Any person may occupy more than one office of the Corporation at any time.

SECTION 4. Tenure. Except as otherwise provided by the Certificate or by these Bylaws, each of the officers of the Corporation shall hold office until the regular annual meeting of the Board of Directors following the next Annual Meeting or until his or her successor is elected and qualified or until his or her earlier resignation or removal.

SECTION 5. Resignation. Any officer may resign by delivering his or her written or electronically transmitted resignation to the Corporation addressed to the President or the Secretary, and such resignation shall be effective upon receipt, unless the resignation otherwise provides.

SECTION 6. Removal. Except as otherwise provided by law or by resolution of the Board of Directors, the Board of Directors may remove any officer with or without cause by the affirmative vote of a majority of the directors then in office.

SECTION 7. Absence or Disability. In the event of the absence or disability of any officer, the Board of Directors may designate another officer to act temporarily in place of such absent or disabled officer.

SECTION 8. Vacancies. Any vacancy in any office may be filled for the unexpired portion of the term by the Board of Directors.

SECTION 9. President. The President shall, subject to the direction of the Board of Directors, have such powers and shall perform such duties as the Board of Directors may from time to time designate.

SECTION 10. Chairman of the Board. The Chairman of the Board, if one is elected, shall have such powers and shall perform such duties as the Board of Directors may from time to time designate.

SECTION 11. Chief Executive Officer. The Chief Executive Officer, if one is elected, shall have such powers and shall perform such duties as the Board of Directors may from time to time designate.

SECTION 12. Vice Presidents and Assistant Vice Presidents. Any Vice President (including any Executive Vice President or Senior Vice President) and any Assistant Vice President shall have such powers and shall perform such duties as the Board of Directors or the Chief Executive Officer may from time to time designate.

SECTION 13. Treasurer and Assistant Treasurers. The Treasurer shall, subject to the direction of the Board of Directors and except as the Board of Directors or the Chief Executive Officer may otherwise provide, have general charge of the financial affairs of the Corporation and shall cause to be kept accurate books of account. The Treasurer shall have custody of all funds, securities, and valuable documents of the Corporation. He or she shall have such other duties and powers as may be designated from time to time by the Board of Directors or the Chief Executive Officer. Any Assistant Treasurer shall have such powers and perform such duties as the Board of Directors or the Chief Executive Officer may from time to time designate.

SECTION 14. Secretary and Assistant Secretaries. The Secretary shall record all the proceedings of the meetings of the stockholders and the Board of Directors (including committees of the Board of Directors) in books kept for that purpose. In his or her absence from any such meeting, a temporary secretary chosen at the meeting shall record the proceedings thereof. The Secretary shall have charge of the stock ledger (which may, however, be kept by any transfer or other agent of the Corporation). The Secretary shall have custody of the seal of the Corporation, and the Secretary, or an Assistant Secretary shall have authority to affix it to any instrument requiring it, and, when so affixed, the seal may be attested by his or her signature or that of an Assistant Secretary. The Secretary shall have such other duties and powers as may be designated from time to time by the Board of Directors or the Chief Executive Officer. In the absence of the Secretary, any Assistant Secretary may perform his or her duties and responsibilities. Any Assistant Secretary shall have such powers and perform such duties as the Board of Directors or the Chief Executive Officer may from time to time designate.

SECTION 15. Other Powers and Duties. Subject to these Bylaws and to such limitations as the Board of Directors may from time to time prescribe, the officers of the Corporation shall each have such powers and duties as generally pertain to their respective offices, as well as such powers and duties as from time to time may be conferred by the Board of Directors or the Chief Executive Officer.

ARTICLE IV

Capital Stock

SECTION 1. Certificates of Stock. Each stockholder shall be entitled to a certificate of the capital stock of the Corporation in such form as may from time to time be prescribed by the Board of Directors. Such certificate shall be signed by any two authorized officers of the Corporation. The Corporation seal and the signatures by the Corporation's officers, the transfer agent or the registrar may be facsimiles. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed on such certificate shall have ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if he or she were such officer, transfer agent or registrar at the time of its issue. Every certificate for shares of stock which are subject to any restriction on transfer and every certificate issued when the Corporation is authorized to issue more than one class or series of stock shall contain such legend with respect thereto as is required by law. Notwithstanding anything to the contrary provided in these Bylaws, the Board of Directors of the

Corporation may provide by resolution or resolutions that some or all of any or all classes or series of its stock shall be uncertificated shares (except that the foregoing shall not apply to shares represented by a certificate until such certificate is surrendered to the Corporation), and by the approval and adoption of these Bylaws the Board of Directors has determined that all classes or series of the Corporation's stock may be uncertificated, whether upon original issuance, re-issuance, or subsequent transfer.

SECTION 2. Transfers. Subject to any restrictions on transfer and unless otherwise provided by the Board of Directors, shares of stock that are represented by a certificate may be transferred on the books of the Corporation by the surrender to the Corporation or its transfer agent of the certificate theretofore properly endorsed or accompanied by a written assignment or power of attorney properly executed, with transfer stamps (if necessary) affixed, and with such proof of the authenticity of signature as the Corporation or its transfer agent may reasonably require. Shares of stock that are not represented by a certificate may be transferred on the books of the Corporation by submitting to the Corporation or its transfer agent such evidence of transfer and following such other procedures as the Corporation or its transfer agent may require.

SECTION 3. Record Holders. Except as may otherwise be required by law, by the Certificate or by these Bylaws, the Corporation shall be entitled to treat the record holder of stock as shown on its books as the owner of such stock for all purposes, including the payment of dividends and the right to vote with respect thereto, regardless of any transfer, pledge or other disposition of such stock, until the shares have been transferred on the books of the Corporation in accordance with the requirements of these Bylaws.

SECTION 4. Record Date. In order that the Corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for the purpose of any other lawful action, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date: (a) in the case of determination of stockholders entitled to vote at any meeting of stockholders, shall, unless otherwise required by law, not be more than sixty (60) nor less than ten (10) days before the date of such meeting and (b) in the case of any other action, shall not be more than sixty (60) days prior to such other action. If no record date is fixed: (i) the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held; and (ii) the record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto.

SECTION 5. Replacement of Certificates. In case of the alleged loss, destruction or mutilation of a certificate of stock of the Corporation, a duplicate certificate may be issued in place thereof, upon such terms as the Board of Directors may prescribe.

ARTICLE V

Indemnification

SECTION 1. Definitions. For purposes of this Article:

- (a) "Corporate Status" describes the status of a person who is serving or has served (i) as a Director of the Corporation, (ii) as an Officer of the Corporation, (iii) as a Non-Officer Employee of the Corporation, or (iv) as a director, partner, trustee, officer, employee or agent of any other corporation, partnership, limited liability company, joint venture, trust, employee benefit plan, foundation, association, organization or other legal entity which such person is or was serving at the request of the Corporation. For purposes of this Section 1(a), a Director, Officer or Non-Officer Employee of the Corporation who is serving or has served as a director, partner, trustee, officer, employee or agent of a Subsidiary shall be deemed to be serving at the request of the Corporation. Notwithstanding the foregoing, "Corporate Status" shall not include the status of a person who is serving or has served as a director, officer, employee or agent of a constituent corporation absorbed in a merger or consolidation transaction with the Corporation with respect to such person's activities prior to said transaction, unless specifically authorized by the Board of Directors or the stockholders of the Corporation;
- (b) "Director" means any person who serves or has served the Corporation as a director on the Board of Directors of the Corporation;
- (c) "Disinterested Director" means, with respect to each Proceeding in respect of which indemnification is sought hereunder, a Director of the Corporation who is not and was not a party to such Proceeding;
- (d) "Expenses" means all attorneys' fees, retainers, court costs, transcript costs, fees of expert witnesses, private investigators and professional advisors (including, without limitation, accountants and investment bankers), travel expenses, duplicating costs, printing and binding costs, costs of preparation of demonstrative evidence and other courtroom presentation aids and devices, costs incurred in connection with document review, organization, imaging and computerization, telephone charges, postage, delivery service fees, and all other disbursements, costs or expenses of the type customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, being or preparing to be a witness in, settling or otherwise participating in, a Proceeding;
- (e) "Liabilities" means judgments, damages, liabilities, losses, penalties, excise taxes, fines and amounts paid in settlement;
- (f) "Non-Officer Employee" means any person who serves or has served as an employee or agent of the Corporation, but who is not or was not a Director or Officer;
- (g) "Officer" means any person who serves or has served the Corporation as an officer of the Corporation appointed by the Board of Directors of the Corporation;

(h) "Proceeding" means any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, inquiry, investigation, administrative hearing or other proceeding, whether civil, criminal, administrative, arbitral or investigative; and

(i) "Subsidiary" shall mean any corporation, partnership, limited liability company, joint venture, trust or other entity of which the Corporation owns (either directly or through or together with another Subsidiary of the Corporation) either (i) a general partner, managing member or other similar interest or (ii) (A) fifty percent (50%) or more of the voting power of the voting capital equity interests of such corporation, partnership, limited liability company, joint venture or other entity, or (B) fifty percent (50%) or more of the outstanding voting capital stock or other voting equity interests of such corporation, partnership, limited liability company, joint venture or other entity.

SECTION 2. Indemnification of Directors and Officers.

(a) Subject to the operation of Section 4 of this Article V of these Bylaws, each Director and Officer shall be indemnified and held harmless by the Corporation to the fullest extent authorized by the DGCL, as the same exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than such law permitted the Corporation to provide prior to such amendment), and to the extent authorized in this Section 2.

(1) Actions, Suits and Proceedings Other than By or In the Right of the Corporation. Each Director and Officer shall be indemnified and held harmless by the Corporation against any and all Expenses and Liabilities that are incurred or paid by such Director or Officer or on such Director's or Officer's behalf in connection with any Proceeding or any claim, issue or matter therein (other than an action by or in the right of the Corporation), which such Director or Officer is, or is threatened to be made, a party to or participant in by reason of such Director's or Officer's Corporate Status, if such Director or Officer acted in good faith and in a manner such Director or Officer reasonably believed to be in or not opposed to the best interests of the Corporation and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was unlawful.

(2) Actions, Suits and Proceedings By or In the Right of the Corporation. Each Director and Officer shall be indemnified and held harmless by the Corporation against any and all Expenses that are incurred by such Director or Officer or on such Director's or Officer's behalf in connection with any Proceeding or any claim, issue or matter therein by or in the right of the Corporation, which such Director or Officer is, or is threatened to be made, a party to or participant in by reason of such Director's or Officer's Corporate Status, if such Director or Officer acted in good faith and in a manner such Director or Officer reasonably believed to be in or not opposed to the best interests of the Corporation; provided, however, that no indemnification shall be made under this Section 2(a)(2) in respect of any claim, issue or matter as to which such Director or Officer shall have been finally adjudged by a court of competent jurisdiction to be liable to the Corporation, unless, and only to the extent that, the Court of Chancery or another court in which such Proceeding was brought shall determine upon application that, despite adjudication of liability, but in view of all the circumstances of the case, such Director or Officer is fairly and reasonably entitled to indemnification for such Expenses that such court deems proper.

(3) Survival of Rights. The rights of indemnification provided by this Section 2 shall continue as to a Director or Officer after he or she has ceased to be a Director or Officer and shall inure to the benefit of his or her heirs, executors, administrators and personal representatives.

(4) Actions by Directors or Officers. Notwithstanding the foregoing, the Corporation shall indemnify any Director or Officer seeking indemnification in connection with a Proceeding initiated by such Director or Officer only if such Proceeding (including any parts of such Proceeding not initiated by such Director or Officer) was authorized in advance by the Board of Directors of the Corporation, unless such Proceeding was brought to enforce such Officer's or Director's rights to indemnification or, in the case of Directors, advancement of Expenses under these Bylaws in accordance with the provisions set forth herein.

SECTION 3. Indemnification of Non-Officer Employees. Subject to the operation of Section 4 of this Article V of these Bylaws, each Non-Officer Employee may, in the discretion of the Board of Directors of the Corporation, be indemnified by the Corporation to the fullest extent authorized by the DGCL, as the same exists or may hereafter be amended, against any or all Expenses and Liabilities that are incurred by such Non-Officer Employee or on such Non-Officer Employee's behalf in connection with any threatened, pending or completed Proceeding, or any claim, issue or matter therein, which such Non-Officer Employee is, or is threatened to be made, a party to or participant in by reason of such Non-Officer Employee's Corporate Status, if such Non-Officer Employee acted in good faith and in a manner such Non-Officer Employee reasonably believed to be in or not opposed to the best interests of the Corporation and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was unlawful. The rights of indemnification provided by this Section 3 shall exist as to a Non-Officer Employee after he or she has ceased to be a Non-Officer Employee and shall inure to the benefit of his or her heirs, personal representatives, executors and administrators. Notwithstanding the foregoing, the Corporation may indemnify any Non-Officer Employee seeking indemnification in connection with a Proceeding initiated by such Non-Officer Employee only if such Proceeding was authorized in advance by the Board of Directors of the Corporation.

SECTION 4. Determination. Unless ordered by a court, no indemnification shall be provided pursuant to this Article V to a Director, to an Officer or to a Non-Officer Employee unless a determination shall have been made that such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Corporation and, with respect to any criminal Proceeding, such person had no reasonable cause to believe his or her conduct was unlawful. Such determination shall be made by (a) a majority vote of the Disinterested Directors, even though less than a quorum of the Board of Directors, (b) a committee comprised of Disinterested Directors, such committee having been designated by a majority vote of the Disinterested Directors (even though less than a quorum), (c) if there are no such Disinterested Directors, or if a majority of Disinterested Directors so directs, by independent legal counsel in a written opinion, or (d) by the stockholders of the Corporation.

SECTION 5. Advancement of Expenses to Directors Prior to Final Disposition.

(a) The Corporation shall advance all Expenses incurred by or on behalf of any Director in connection with any Proceeding in which such Director is involved by reason of such Director's Corporate Status within thirty (30) days after the receipt by the Corporation of a written statement from such Director requesting such advance or advances from time to time, whether prior to or after final disposition of such Proceeding. Such statement or statements shall reasonably evidence the Expenses incurred by such Director and shall be preceded or accompanied by an undertaking by or on behalf of such Director to repay any Expenses so advanced if it shall ultimately be determined that such Director is not entitled to be indemnified against such Expenses. Notwithstanding the foregoing, the Corporation shall advance all Expenses incurred by or on behalf of any Director seeking advancement of expenses hereunder in connection with a Proceeding initiated by such Director only if such Proceeding (including any parts of such Proceeding not initiated by such Director) was (i) authorized by the Board of Directors of the Corporation, or (ii) brought to enforce such Director's rights to indemnification or advancement of Expenses under these Bylaws.

(b) If a claim for advancement of Expenses hereunder by a Director is not paid in full by the Corporation within thirty (30) days after receipt by the Corporation of documentation of Expenses and the required undertaking, such Director may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim and if successful in whole or in part, such Director shall also be entitled to be paid the expenses of prosecuting such claim. The failure of the Corporation (including its Board of Directors or any committee thereof, independent legal counsel, or stockholders) to make a determination concerning the permissibility of such advancement of Expenses under this Article V shall not be a defense to an action brought by a Director for recovery of the unpaid amount of an advancement claim and shall not create a presumption that such advancement is not permissible. The burden of proving that a Director is not entitled to an advancement of expenses shall be on the Corporation.

(c) In any suit brought by the Corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the Corporation shall be entitled to recover such expenses upon a final adjudication that the Director has not met any applicable standard for indemnification set forth in the DGCL.

SECTION 6. Advancement of Expenses to Officers and Non-Officer Employees Prior to Final Disposition.

(a) The Corporation may, at the discretion of the Board of Directors of the Corporation, advance any or all Expenses incurred by or on behalf of any Officer or any Non-Officer Employee in connection with any Proceeding in which such person is involved by reason of his or her Corporate Status as an Officer or Non-Officer Employee upon the receipt by the Corporation of a statement or statements from such Officer or Non-Officer Employee requesting such advance or advances from time to time, whether prior to or after final disposition of such

Proceeding. Such statement or statements shall reasonably evidence the Expenses incurred by such Officer or Non-Officer Employee and shall be preceded or accompanied by an undertaking by or on behalf of such person to repay any Expenses so advanced if it shall ultimately be determined that such Officer or Non-Officer Employee is not entitled to be indemnified against such Expenses.

(b) In any suit brought by the Corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the Corporation shall be entitled to recover such expenses upon a final adjudication that the Officer or Non-Officer Employee has not met any applicable standard for indemnification set forth in the DGCL.

SECTION 7. Contractual Nature of Rights.

(a) The provisions of this Article V shall be deemed to be a contract between the Corporation and each Director and Officer entitled to the benefits hereof at any time while this Article V is in effect, in consideration of such person's past or current and any future performance of services for the Corporation. Neither amendment, repeal or modification of any provision of this Article V nor the adoption of any provision of the Certificate of Incorporation inconsistent with this Article V shall eliminate or reduce any right conferred by this Article V in respect of any act or omission occurring, or any cause of action or claim that accrues or arises or any state of facts existing, at the time of or before such amendment, repeal, modification or adoption of an inconsistent provision (even in the case of a proceeding based on such a state of facts that is commenced after such time), and all rights to indemnification and advancement of Expenses granted herein or arising out of any act or omission shall vest at the time of the act or omission in question, regardless of when or if any proceeding with respect to such act or omission is commenced. The rights to indemnification and to advancement of expenses provided by, or granted pursuant to, this Article V shall continue notwithstanding that the person has ceased to be a director or officer of the Corporation and shall inure to the benefit of the estate, heirs, executors, administrators, legatees and distributees of such person.

(b) If a claim for indemnification hereunder by a Director or Officer is not paid in full by the Corporation within sixty (60) days after receipt by the Corporation of a written claim for indemnification, such Director or Officer may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim, and if successful in whole or in part, such Director or Officer shall also be entitled to be paid the expenses of prosecuting such claim. The failure of the Corporation (including its Board of Directors or any committee thereof, independent legal counsel, or stockholders) to make a determination concerning the permissibility of such indemnification under this Article V shall not be a defense to an action brought by a Director or Officer for recovery of the unpaid amount of an indemnification claim and shall not create a presumption that such indemnification is not permissible. The burden of proving that a Director or Officer is not entitled to indemnification shall be on the Corporation.

(c) In any suit brought by a Director or Officer to enforce a right to indemnification hereunder, it shall be a defense that such Director or Officer has not met any applicable standard for indemnification set forth in the DGCL.

SECTION 8. Non-Exclusivity of Rights. The rights to indemnification and to advancement of Expenses set forth in this Article V shall not be exclusive of any other right which any Director, Officer, or Non-Officer Employee may have or hereafter acquire under any statute, provision of the Certificate or these Bylaws, agreement, vote of stockholders or Disinterested Directors or otherwise.

SECTION 9. Insurance. The Corporation may maintain insurance, at its expense, to protect itself and any Director, Officer or Non-Officer Employee against any liability of any character asserted against or incurred by the Corporation or any such Director, Officer or Non-Officer Employee, or arising out of any such person's Corporate Status, whether or not the Corporation would have the power to indemnify such person against such liability under the DGCL or the provisions of this Article V.

SECTION 10. Other Indemnification. The Corporation's obligation, if any, to indemnify or provide advancement of Expenses to any person under this Article V as a result of such person serving, at the request of the Corporation, as a director, partner, trustee, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise shall be reduced by any amount such person may collect as indemnification or advancement of Expenses from such other corporation, partnership, joint venture, trust, employee benefit plan or enterprise (the "Primary Indemnitor"). Any indemnification or advancement of Expenses under this Article V owed by the Corporation as a result of a person serving, at the request of the Corporation, as a director, partner, trustee, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise shall only be in excess of, and shall be secondary to, the indemnification or advancement of Expenses available from the applicable Primary Indemnitor(s) and any applicable insurance policies.

ARTICLE VI

Miscellaneous Provisions

SECTION 1. Fiscal Year. The fiscal year of the Corporation shall be determined by the Board of Directors.

SECTION 2. Seal. The Board of Directors shall have power to adopt and alter the seal of the Corporation.

SECTION 3. Execution of Instruments. All deeds, leases, transfers, contracts, bonds, notes and other obligations to be entered into by the Corporation in the ordinary course of its business without director action may be executed on behalf of the Corporation by the Chairman of the Board, if one is elected, the President or the Treasurer or any other officer, employee or agent of the Corporation as the Board of Directors or the executive committee of the Board may authorize.

SECTION 4. Voting of Securities. Unless the Board of Directors otherwise provides, the Chairman of the Board, if one is elected, the President or the Treasurer may waive notice of and act on behalf of the Corporation (including with regard to voting and actions by written consent), or appoint another person or persons to act as proxy or attorney in fact for the Corporation with or without discretionary power and/or power of substitution, at any meeting of stockholders or shareholders of any other corporation or organization, any of whose securities are held by the Corporation.

SECTION 5. Resident Agent. The Board of Directors may appoint a resident agent upon whom legal process may be served in any action or proceeding against the Corporation.

SECTION 6. Corporate Records. The original or attested copies of the Certificate, Bylaws and records of all meetings of the incorporators, stockholders and the Board of Directors and the stock transfer books, which shall contain the names of all stockholders, their record addresses and the amount of stock held by each, may be kept outside the State of Delaware and shall be kept at the principal office of the Corporation, at an office of its counsel, at an office of its transfer agent or at such other place or places as may be designated from time to time by the Board of Directors.

SECTION 7. Certificate. All references in these Bylaws to the Certificate shall be deemed to refer to the Third Amended and Restated Certificate of Incorporation of the Corporation, as amended and/or restated and in effect from time to time.

SECTION 8. Exclusive Jurisdiction of Delaware Courts. Unless the Corporation consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for state law claims for (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of or based on a fiduciary duty owed by any current or former director, officer or other employee of the Corporation to the Corporation or the Corporation's stockholders, (iii) any action asserting a claim against the Corporation or any current or former director, officer, or other employee or stockholder of the Corporation arising pursuant to any provision of the Delaware General Corporation Law or the Certificate or Bylaws, or (iv) any action asserting a claim against the Corporation or any current or former director or officer or other employee of the Corporation governed by the internal affairs doctrine; provided, however, that this provision will not apply to any causes of action arising under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934. Unless the Corporation consents in writing to the selection of an alternative forum, the United States District Court for the District of Massachusetts shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended. Any person or entity purchasing or otherwise acquiring any interest in shares of capital stock of the Corporation shall be deemed to have notice of and consented to the provisions of this Section 8.

SECTION 9. Amendment of Bylaws.

(a) Amendment by Directors. Except as provided otherwise by law, these Bylaws may be amended or repealed by the Board of Directors by the affirmative vote of a majority of the directors then in office.

(b) Amendment by Stockholders. Except as otherwise required by these Bylaws or by law, these Bylaws may be amended or repealed at any Annual Meeting, or special meeting of stockholders called for such purpose in accordance with these Bylaws, by the affirmative vote of a majority of the outstanding shares entitled to vote on such amendment or repeal, voting together as a single class. Notwithstanding the foregoing, stockholder approval shall not be required unless mandated by the Certificate, these Bylaws, or other applicable law.

SECTION 10. Notices. If mailed, notice to stockholders shall be deemed given when deposited in the mail, postage prepaid, directed to the stockholder at such stockholder's address as it appears on the records of the Corporation. Without limiting the manner by which notice otherwise may be given to stockholders, any notice to stockholders may be given by electronic transmission in the manner provided in Section 232 of the DGCL.

SECTION 11. Waivers. A written waiver of any notice, signed by a stockholder or director, or waiver by electronic transmission by such person, whether given before or after the time of the event for which notice is to be given, shall be deemed equivalent to the notice required to be given to such person. Neither the business to be transacted at, nor the purpose of, any meeting need be specified in such a waiver.

Adopted by the Board on November 16, 2021 and approved by the stockholders on December 3, 2021 subject to and effective upon the effectiveness of the Corporation's Registration Statement on Form S-1 for its initial public offering.



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January 3, 2022

Vigil Neuroscience, Inc.
1 Broadway, 7th Floor, Suite 07-300
Cambridge, MA 02142

Re: Securities Registered under Registration Statement on Form S-1

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-1 (File No. 333-261230) (as amended or supplemented, the "Registration Statement") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), relating to the registration of the offering by Vigil Neuroscience, Inc., a Delaware corporation (the "Company") of up to 8,050,000 shares (the "Shares") of the Company's Common Stock, \$0.0001 par value share, including 1,050,000 shares purchasable by the underwriters upon their exercise of an over-allotment option granted to the underwriters by the Company. The Shares are being sold to the several underwriters named in, and pursuant to, an underwriting agreement among the Company and such underwriters (the "Underwriting Agreement").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinions set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinions set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the Underwriting Agreement, the Shares will be validly issued, fully paid and non-assessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Goodwin Procter LLP

GOODWIN PROCTER LLP

VIGIL NEUROSCIENCE, INC.

2021 STOCK OPTION AND INCENTIVE PLAN

SECTION 1. GENERAL PURPOSE OF THE PLAN; DEFINITIONS

The name of the plan is the Vigil Neuroscience, Inc. 2021 Stock Option and Incentive Plan (as amended from time to time, the “Plan”). The purpose of the Plan is to encourage and enable the officers, employees, Non-Employee Directors and Consultants of Vigil Neuroscience, Inc. (the “Company”) and its Affiliates upon whose judgment, initiative and efforts the Company largely depends for the successful conduct of its business to acquire a proprietary interest in the Company. It is anticipated that providing such persons with a direct stake in the Company’s welfare will assure a closer identification of their interests with those of the Company and its stockholders, thereby stimulating their efforts on the Company’s behalf and strengthening their desire to remain with the Company.

The following terms shall be defined as set forth below:

“*Act*” means the Securities Act of 1933, as amended, and the rules and regulations thereunder.

“*Administrator*” means either the Board or the compensation committee of the Board or a similar committee performing the functions of the compensation committee and which is comprised of not less than two Non-Employee Directors who are independent.

“*Affiliate*” means, at the time of determination, any “parent” or “subsidiary” of the Company as such terms are defined in Rule 405 of the Act. The Board will have the authority to determine the time or times at which “parent” or “subsidiary” status is determined within the foregoing definition.

“*Award*” or “*Awards*,” except where referring to a particular category of grant under the Plan, shall include Incentive Stock Options, Non-Qualified Stock Options, Stock Appreciation Rights, Restricted Stock Awards, Restricted Stock Units, Unrestricted Stock Awards, Cash-Based Awards, and Dividend Equivalent Rights.

“*Award Certificate*” means a written or electronic document setting forth the terms and provisions applicable to an Award granted under the Plan. Each Award Certificate is subject to the terms and conditions of the Plan.

“*Board*” means the Board of Directors of the Company.

“*Cash-Based Award*” means an Award entitling the recipient to receive a cash-denominated payment.

“*Code*” means the Internal Revenue Code of 1986, as amended, and any successor Code, and related rules, regulations and interpretations.

“*Consultant*” means a consultant or adviser who provides *bona fide* services to the Company or an Affiliate as an independent contractor and who qualifies as a consultant or advisor under Instruction A.1.(a)(1) of Form S-8 under the Act.

“*Dividend Equivalent Right*” means an Award entitling the grantee to receive credits based on ordinary cash dividends that would have been paid on the shares of Stock specified in the Dividend Equivalent Right (or other Award to which it relates) if such shares had been issued to and held by the grantee.

“*Effective Date*” means the date on which the Plan becomes effective as set forth in Section 19.

“*Exchange Act*” means the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder.

“*Fair Market Value*” of the Stock on any given date means the fair market value of the Stock determined in good faith by the Administrator; provided, however, that if the Stock is listed on the National Association of Securities Dealers Automated Quotation System (“NASDAQ”), NASDAQ Global Market, The New York Stock Exchange or another national securities exchange or traded on any established market, the determination shall be made by reference to market quotations. If there are no market quotations for such date, the determination shall be made by reference to the last date preceding such date for which there are market quotations; provided further, however, that if the date for which Fair Market Value is determined is the Registration Date, the Fair Market Value shall be the “Price to the Public” (or equivalent) set forth on the cover page for the final prospectus relating to the Company’s initial public offering.

“*Incentive Stock Option*” means any Stock Option designated and qualified as an “incentive stock option” as defined in Section 422 of the Code.

“*Non-Employee Director*” means a member of the Board who is not also an employee of the Company or any Subsidiary.

“*Non-Qualified Stock Option*” means any Stock Option that is not an Incentive Stock Option.

“*Option*” or “*Stock Option*” means any option to purchase shares of Stock granted pursuant to Section 5.

“*Registration Date*” means the date upon which the registration statement on Form S-1 that is filed by the Company with respect to its initial public offering is declared effective by the Securities and Exchange Commission.

“*Restricted Shares*” means the shares of Stock underlying a Restricted Stock Award that remain subject to a risk of forfeiture or the Company’s right of repurchase.

“*Restricted Stock Award*” means an Award of Restricted Shares subject to such restrictions and conditions as the Administrator may determine at the time of grant.

“*Restricted Stock Units*” means an Award of stock units subject to such restrictions and conditions as the Administrator may determine at the time of grant.

“*Sale Event*” means (i) the sale of all or substantially all of the assets of the Company on a consolidated basis to an unrelated person or entity, (ii) a merger, reorganization or consolidation pursuant to which the holders of the Company’s outstanding voting power and outstanding stock immediately prior to such transaction do not own a majority of the outstanding voting power and outstanding stock or other equity interests of the resulting or successor entity (or its ultimate parent, if applicable) immediately upon completion of such transaction, (iii) the sale of all of the Stock of the Company to an unrelated person, entity or group thereof acting in concert, or (iv) any other transaction in which the owners of the Company’s outstanding voting power immediately prior to such transaction do not own at least a majority of the outstanding voting power of the Company or any successor entity immediately upon completion of the transaction other than as a result of the acquisition of securities directly from the Company.

“*Sale Price*” means the value as determined by the Administrator of the consideration payable, or otherwise to be received by stockholders, per share of Stock pursuant to a Sale Event.

“*Section 409A*” means Section 409A of the Code and the regulations and other guidance promulgated thereunder.

“*Service Relationship*” means any relationship as an employee, director or Consultant of the Company or any Affiliate (e.g., a Service Relationship shall be deemed to continue without interruption in the event an individual’s status changes from full-time employee to part-time employee or Consultant).

“*Stock*” means the Common Stock, par value \$0.0001 per share, of the Company, subject to adjustments pursuant to Section 3.

“*Stock Appreciation Right*” means an Award entitling the recipient to receive shares of Stock (or cash, to the extent explicitly provided for in the applicable Award Certificate) having a value equal to the excess of the Fair Market Value of the Stock on the date of exercise over the exercise price of the Stock Appreciation Right multiplied by the number of shares of Stock with respect to which the Stock Appreciation Right shall have been exercised.

“*Subsidiary*” means any corporation or other entity (other than the Company) in which the Company has at least a 50 percent interest, either directly or indirectly.

“*Ten Percent Owner*” means an employee who owns or is deemed to own (by reason of the attribution rules of Section 424(d) of the Code) more than 10 percent of the combined voting power of all classes of stock of the Company or any parent or subsidiary corporation.

“*Unrestricted Stock Award*” means an Award of shares of Stock free of any restrictions.

SECTION 2. ADMINISTRATION OF PLAN; ADMINISTRATOR AUTHORITY TO SELECT GRANTEES AND DETERMINE AWARDS

(a) Administration of Plan. The Plan shall be administered by the Administrator.

(b) **Powers of Administrator.** The Administrator shall have the power and authority to grant Awards consistent with the terms of the Plan, including the power and authority:

(i) to select the individuals to whom Awards may from time to time be granted;

(ii) to determine the time or times of grant, and the extent, if any, of Incentive Stock Options, Non-Qualified Stock Options, Stock Appreciation Rights, Restricted Stock Awards, Restricted Stock Units, Unrestricted Stock Awards, Cash-Based Awards, and Dividend Equivalent Rights, or any combination of the foregoing, granted to any one or more grantees;

(iii) to determine the number of shares of Stock to be covered by any Award;

(iv) to determine and modify from time to time the terms and conditions, including restrictions, not inconsistent with the terms of the Plan, of any Award, which terms and conditions may differ among individual Awards and grantees, and to approve the forms of Award Certificates;

(v) to accelerate at any time the exercisability or vesting of all or any portion of any Award;

(vi) subject to the provisions of Section 5(c) or Section 6(d), as applicable, to extend at any time the period in which Stock Options and Stock Appreciation Rights may be exercised; and

(vii) at any time to adopt, alter and repeal such rules, guidelines and practices for administration of the Plan and for its own acts and proceedings as it shall deem advisable; to interpret the terms and provisions of the Plan and any Award (including related written instruments); to make all determinations it deems advisable for the administration of the Plan; to decide all disputes arising in connection with the Plan; and to otherwise supervise the administration of the Plan.

All decisions and interpretations of the Administrator shall be binding on all persons, including the Company and Plan grantees.

(c) **Delegation of Authority to Grant Awards.** Subject to applicable law, the Administrator, in its discretion, may delegate to a committee consisting of one or more officers of the Company, including the Chief Executive Officer of the Company, all or part of the Administrator's authority and duties with respect to the granting of Awards to individuals who are (i) not subject to the reporting and other provisions of Section 16 of the Exchange Act and (ii) not members of the delegated committee. Any such delegation by the Administrator shall include a limitation as to the amount of Stock underlying Awards that may be granted during the period of the delegation and shall contain guidelines as to the determination of the exercise price and the vesting criteria. The Administrator may revoke or amend the terms of a delegation at any time but such action shall not invalidate any prior actions of the Administrator's delegate or delegates that were consistent with the terms of the Plan.

(d) Award Certificate. Other than with respect to Cash-Based Awards, Awards under the Plan shall be evidenced by Award Certificates that set forth the terms, conditions and limitations for each Award which may include, without limitation, the term of an Award and the provisions applicable in the event employment or service terminates.

(e) Indemnification. Neither the Board nor the Administrator, nor any member of either or any delegate thereof, shall be liable for any act, omission, interpretation, construction or determination made in good faith in connection with the Plan, and the members of the Board and the Administrator (and any delegate thereof) shall be entitled in all cases to indemnification and reimbursement by the Company in respect of any claim, loss, damage or expense (including, without limitation, reasonable attorneys' fees) arising or resulting therefrom to the fullest extent permitted by law and/or under the Company's articles or bylaws or any directors' and officers' liability insurance coverage which may be in effect from time to time and/or any indemnification agreement between such individual and the Company.

(f) Foreign Award Recipients. Notwithstanding any provision of the Plan to the contrary, in order to comply, or facilitate compliance, with the laws in other countries in which the Company and its Subsidiaries operate or have employees or other individuals eligible for Awards, the Administrator, in its sole discretion, shall have the power and authority to: (i) determine which Subsidiaries shall be covered by the Plan; (ii) determine which individuals outside the United States are eligible to participate in the Plan; (iii) modify the terms and conditions of any Award granted to individuals outside the United States to comply, or facilitate compliance, with applicable foreign laws; (iv) establish subplans and modify exercise procedures and other terms and procedures, to the extent the Administrator determines such actions to be necessary or advisable (and such subplans and/or modifications shall be attached to this Plan as appendices); provided, however, that no such subplans and/or modifications shall increase the share limitations contained in Section 3(a) hereof; and (v) take any action, before or after an Award is made, that the Administrator determines to be necessary or advisable to obtain approval or comply with any local governmental regulatory exemptions or approvals. Notwithstanding the foregoing, the Administrator may not take any actions hereunder, and no Awards shall be granted, that would violate the Exchange Act or any other applicable United States securities law, the Code, or any other applicable United States governing statute or law.

SECTION 3. STOCK ISSUABLE UNDER THE PLAN; MERGERS; SUBSTITUTION

(a) Stock Issuable. The maximum number of shares of Stock reserved and available for issuance under the Plan shall be 3,145,281 (the "Initial Limit"), subject to adjustment as provided in this Section 3, plus on January 1, 2022 and each January 1 thereafter, the number of shares of Stock reserved and available for issuance under the Plan shall be cumulatively increased by (i) five (5%) percent of the number of shares of Stock issued and outstanding on the immediately preceding December 31 or (ii) such lesser number of shares as determined by the Administrator (the "Annual Increase"). Subject to such overall limitation, the maximum aggregate number of shares of Stock that may be issued in the form of Incentive Stock Options shall not exceed the Initial Limit, as cumulatively increased on January 1, 2022 and each January 1 thereafter by the lesser of the Annual Increase for such year or 1,430,650 shares of Stock, subject in all cases to adjustment as provided in Section 3. For purposes of these limitations, the shares of Stock underlying any awards under the Plan and the 2020 Plan that are forfeited,

canceled, held back upon exercise of an option or settlement of an award to cover the exercise price or tax withholding, reacquired by the Company prior to vesting, satisfied without the issuance of Stock or otherwise terminated (other than by exercise) shall be added back to the shares of Stock available for issuance under the Plan and, to the extent permitted under Section 422 of the Code and the regulations promulgated thereunder, the shares of Stock that may be issued as Incentive Stock Options. In the event the Company repurchases shares of Stock on the open market, such shares shall not be added to the shares of Stock available for issuance under the Plan. Subject to such overall limitations, shares of Stock may be issued up to such maximum number pursuant to any type or types of Award. The shares available for issuance under the Plan may be authorized but unissued shares of Stock or shares of Stock reacquired by the Company.

(b) Changes in Stock. Subject to Section 3(c) hereof, if, as a result of any reorganization, recapitalization, reclassification, stock dividend, extraordinary cash dividend, stock split, reverse stock split or other similar change in the Company's capital stock, the outstanding shares of Stock are increased or decreased or are exchanged for a different number or kind of shares or other securities of the Company, or additional shares or new or different shares or other securities of the Company or other non-cash assets are distributed with respect to such shares of Stock or other securities, or, if, as a result of any merger or consolidation, sale of all or substantially all of the assets of the Company, the outstanding shares of Stock are converted into or exchanged for securities of the Company or any successor entity (or a parent or subsidiary thereof), the Administrator shall make an appropriate or proportionate adjustment in (i) the maximum number of shares reserved for issuance under the Plan, including the maximum number of shares that may be issued in the form of Incentive Stock Options, (ii) the number and kind of shares or other securities subject to any then outstanding Awards under the Plan, (iii) the repurchase price, if any, per share subject to each outstanding Restricted Stock Award, and (iv) the exercise price for each share subject to any then outstanding Stock Options and Stock Appreciation Rights under the Plan, without changing the aggregate exercise price (i.e., the exercise price multiplied by the number of shares subject to Stock Options and Stock Appreciation Rights) as to which such Stock Options and Stock Appreciation Rights remain exercisable. The Administrator shall also make equitable or proportionate adjustments in the number of shares subject to outstanding Awards and the exercise price and the terms of outstanding Awards to take into consideration cash dividends paid other than in the ordinary course or any other extraordinary corporate event. The adjustment by the Administrator shall be final, binding and conclusive. No fractional shares of Stock shall be issued under the Plan resulting from any such adjustment, but the Administrator in its discretion may make a cash payment in lieu of fractional shares.

(c) Mergers and Other Transactions. In the case of and subject to the consummation of a Sale Event, the parties thereto may cause the assumption or continuation of Awards theretofore granted by the successor entity, or the substitution of such Awards with new Awards of the successor entity or parent thereof, with appropriate adjustment as to the number and kind of shares and, if appropriate, the per share exercise prices, as such parties shall agree. To the extent the parties to such Sale Event do not provide for the assumption, continuation or substitution of Awards, upon the effective time of the Sale Event, the Plan and all outstanding Awards granted hereunder shall terminate. In such case, except as may be otherwise provided in the relevant Award Certificate, all Awards with time-based vesting, conditions or restrictions shall become fully vested and exercisable or nonforfeitable as of the effective time of the Sale

Event, and all Awards with conditions and restrictions relating to the attainment of performance goals may become vested and exercisable or nonforfeitable in connection with a Sale Event in the Administrator's discretion or to the extent specified in the relevant Award Certificate. In the event of such termination, (i) the Company shall have the option (in its sole discretion) to make or provide for a payment, in cash or in kind, to the grantees holding Options and Stock Appreciation Rights, in exchange for the cancellation thereof, in an amount equal to the difference between (A) the Sale Price multiplied by the number of shares of Stock subject to outstanding Options and Stock Appreciation Rights (to the extent then exercisable at prices not in excess of the Sale Price) and (B) the aggregate exercise price of all such outstanding Options and Stock Appreciation Rights (provided that, in the case of an Option or Stock Appreciation Right with an exercise price equal to or greater than the Sale Price, such Option or Stock Appreciation Right shall be cancelled for no consideration); or (ii) each grantee shall be permitted, within a specified period of time prior to the consummation of the Sale Event as determined by the Administrator, to exercise all outstanding Options and Stock Appreciation Rights (to the extent then exercisable) held by such grantee. The Company shall also have the option (in its sole discretion) to make or provide for a payment, in cash or in kind, to the grantees holding other Awards in an amount equal to the Sale Price multiplied by the number of vested shares of Stock under such Awards.

(d) Maximum Awards to Non-Employee Directors. Notwithstanding anything to the contrary in this Plan, the value of all Awards awarded under this Plan and all other cash compensation paid by the Company to any Non-Employee Director in any calendar year for services as a Non-Employee Director shall not exceed \$1,000,000; provided, however, that such amount shall be \$1,250,000 for the calendar year in which the applicable Non-Employee Director is initially elected or appointed to the Board. For the purpose of these limitations, the value of any Award shall be its grant date fair value, as determined in accordance with ASC 718 or successor provision but excluding the impact of estimated forfeitures related to service-based vesting provisions.

SECTION 4. ELIGIBILITY

Grantees under the Plan will be such employees, Non-Employee Directors or Consultants of the Company and its Affiliates as are selected from time to time by the Administrator in its sole discretion; provided that Awards may not be granted to employees, Directors or Consultants who are providing services only to any "parent" of the Company, as such term is defined in Rule 405 of the Act, unless (i) the stock underlying the Awards is treated as "service recipient stock" under Section 409A or (ii) the Company, in consultation with its legal counsel, has determined that such Awards are exempt from or otherwise comply with Section 409A.

SECTION 5. STOCK OPTIONS

(a) Award of Stock Options. The Administrator may grant Stock Options under the Plan. Any Stock Option granted under the Plan shall be in such form as the Administrator may from time to time approve.

Stock Options granted under the Plan may be either Incentive Stock Options or Non-Qualified Stock Options. Incentive Stock Options may be granted only to employees of the

Company or any Subsidiary that is a “subsidiary corporation” within the meaning of Section 424(f) of the Code. To the extent that any Option does not qualify as an Incentive Stock Option, it shall be deemed a Non-Qualified Stock Option.

Stock Options granted pursuant to this Section 5 shall be subject to the following terms and conditions and shall contain such additional terms and conditions, not inconsistent with the terms of the Plan, as the Administrator shall deem desirable. If the Administrator so determines, Stock Options may be granted in lieu of cash compensation at the optionee’s election, subject to such terms and conditions as the Administrator may establish.

(b) Exercise Price. The exercise price per share for the Stock covered by a Stock Option granted pursuant to this Section 5 shall be determined by the Administrator at the time of grant but shall not be less than 100 percent of the Fair Market Value on the date of grant. In the case of an Incentive Stock Option that is granted to a Ten Percent Owner, the exercise price of such Incentive Stock Option shall be not less than 110 percent of the Fair Market Value on the grant date. Notwithstanding the foregoing, Stock Options may be granted with an exercise price per share that is less than 100 percent of the Fair Market Value on the date of grant (i) pursuant to a transaction described in, and in a manner consistent with, Section 424(a) of the Code, (ii) to individuals who are not subject to U.S. income tax on the date of grant or (iii) if the Stock Option is otherwise compliant with Section 409A.

(c) Option Term. The term of each Stock Option shall be fixed by the Administrator, but no Stock Option shall be exercisable more than ten years after the date the Stock Option is granted. In the case of an Incentive Stock Option that is granted to a Ten Percent Owner, the term of such Stock Option shall be no more than five years from the date of grant.

(d) Exercisability; Rights of a Stockholder. Stock Options shall become exercisable at such time or times, whether or not in installments, as shall be determined by the Administrator at or after the grant date. The Administrator may at any time accelerate the exercisability of all or any portion of any Stock Option. An optionee shall have the rights of a stockholder only as to shares acquired upon the exercise of a Stock Option and not as to unexercised Stock Options.

(e) Method of Exercise. Stock Options may be exercised in whole or in part, by giving written or electronic notice of exercise to the Company, specifying the number of shares to be purchased. Payment of the purchase price may be made by one or more of the following methods except to the extent otherwise provided in the Award Certificate:

(i) In cash, by certified or bank check or other instrument acceptable to the Administrator;

(ii) Through the delivery (or attestation to the ownership following such procedures as the Company may prescribe) of shares of Stock that are not then subject to restrictions under any Company plan. Such surrendered shares shall be valued at Fair Market Value on the exercise date;

(iii) By the optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company for the purchase price; provided that in the

event the optionee chooses to pay the purchase price as so provided, the optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Company shall prescribe as a condition of such payment procedure; or

(iv) With respect to Stock Options that are not Incentive Stock Options, by a “net exercise” arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price.

Payment instruments will be received subject to collection. The transfer to the optionee on the records of the Company or of the transfer agent of the shares of Stock to be purchased pursuant to the exercise of a Stock Option will be contingent upon receipt from the optionee (or a purchaser acting in his or her stead in accordance with the provisions of the Stock Option) by the Company of the full purchase price for such shares and the fulfillment of any other requirements contained in the Award Certificate or applicable provisions of laws (including the satisfaction of any withholding taxes that the Company is obligated to withhold with respect to the optionee). In the event an optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the optionee upon the exercise of the Stock Option shall be net of the number of attested shares. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the exercise of Stock Options, such as a system using an internet website or interactive voice response, then the paperless exercise of Stock Options may be permitted through the use of such an automated system.

(f) Annual Limit on Incentive Stock Options. To the extent required for “incentive stock option” treatment under Section 422 of the Code, the aggregate Fair Market Value (determined as of the time of grant) of the shares of Stock with respect to which Incentive Stock Options granted under this Plan and any other plan of the Company or its parent and subsidiary corporations become exercisable for the first time by an optionee during any calendar year shall not exceed \$100,000. To the extent that any Stock Option exceeds this limit, it shall constitute a Non-Qualified Stock Option.

SECTION 6. STOCK APPRECIATION RIGHTS

(a) Award of Stock Appreciation Rights. The Administrator may grant Stock Appreciation Rights under the Plan. A Stock Appreciation Right is an Award entitling the recipient to receive shares of Stock (or cash, to the extent explicitly provided for in the applicable Award Certificate) having a value equal to the excess of the Fair Market Value of a share of Stock on the date of exercise over the exercise price of the Stock Appreciation Right multiplied by the number of shares of Stock with respect to which the Stock Appreciation Right shall have been exercised.

(b) Exercise Price of Stock Appreciation Rights. The exercise price of a Stock Appreciation Right shall not be less than 100 percent of the Fair Market Value of the Stock on the date of grant. Notwithstanding the foregoing, Stock Appreciation Rights may be granted with an exercise price per share that is less than 100 percent of the Fair Market Value on the date of grant (i) pursuant to a transaction described in, and in a manner consistent with, Section 424(a) of the Code, (ii) to individuals who are not subject to U.S. income tax on the date of grant, or (iii) if the Stock Appreciation Right is otherwise compliant with Section 409A.

(c) Grant and Exercise of Stock Appreciation Rights. Stock Appreciation Rights may be granted by the Administrator independently of any Stock Option granted pursuant to Section 5 of the Plan.

(d) Terms and Conditions of Stock Appreciation Rights. Stock Appreciation Rights shall be subject to such terms and conditions as shall be determined on the date of grant by the Administrator. The term of a Stock Appreciation Right may not exceed ten years. The terms and conditions of each such Award shall be determined by the Administrator, and such terms and conditions may differ among individual Awards and grantees.

SECTION 7. RESTRICTED STOCK AWARDS

(a) Nature of Restricted Stock Awards. The Administrator may grant Restricted Stock Awards under the Plan. A Restricted Stock Award is any Award of Restricted Shares subject to such restrictions and conditions as the Administrator may determine at the time of grant. Conditions may be based on continuing employment (or other Service Relationship) and/or achievement of pre-established performance goals and objectives.

(b) Rights as a Stockholder. Upon the grant of the Restricted Stock Award and payment of any applicable purchase price, if any, a grantee shall have the rights of a stockholder with respect to the voting of the Restricted Shares and receipt of dividends; provided that if the lapse of restrictions with respect to the Restricted Stock Award is tied to the attainment of performance goals, any dividends paid by the Company during the performance period shall accrue and shall not be paid to the grantee until and to the extent the performance goals are met with respect to the Restricted Stock Award. Unless the Administrator shall otherwise determine, (i) uncertificated Restricted Shares shall be accompanied by a notation on the records of the Company or the transfer agent to the effect that they are subject to forfeiture until such Restricted Shares are vested as provided in Section 7(d) below, and (ii) certificated Restricted Shares shall remain in the possession of the Company until such Restricted Shares are vested as provided in Section 7(d) below, and the grantee shall be required, as a condition of the grant, to deliver to the Company such instruments of transfer as the Administrator may prescribe.

(c) Restrictions. Restricted Shares may not be sold, assigned, transferred, pledged or otherwise encumbered or disposed of except as specifically provided herein or in the Restricted Stock Award Certificate. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 16 below, in writing after the Award is issued, if a grantee's employment (or other Service Relationship) with the Company and its Subsidiaries terminates for any reason, any Restricted Shares that have not vested at the time of termination shall automatically and without any requirement of notice to such grantee from or other action by or on behalf of, the Company be deemed to have been reacquired by the Company at their original purchase price (if any) from such grantee or such grantee's legal representative simultaneously with such termination of employment (or other Service Relationship), and thereafter shall cease to represent any ownership of the Company by the grantee or rights of the grantee as a stockholder. Following such deemed reacquisition of Restricted Shares that are represented by physical certificates, a grantee shall surrender such certificates to the Company upon request without consideration.

(d) Vesting of Restricted Shares. The Administrator at the time of grant shall specify the date or dates and/or the attainment of pre-established performance goals, objectives and other conditions on which the non-transferability of the Restricted Shares and the Company's right of repurchase or forfeiture shall lapse. Subsequent to such date or dates and/or the attainment of such pre-established performance goals, objectives and other conditions, the shares on which all restrictions have lapsed shall no longer be Restricted Shares and shall be deemed "vested."

SECTION 8. RESTRICTED STOCK UNITS

(a) Nature of Restricted Stock Units. The Administrator may grant Restricted Stock Units under the Plan. A Restricted Stock Unit is an Award of stock units that may be settled in shares of Stock (or cash, to the extent explicitly provided for in the Award Certificate) upon the satisfaction of such restrictions and conditions at the time of grant. Conditions may be based on continuing employment (or other Service Relationship) and/or achievement of pre-established performance goals and objectives. The terms and conditions of each such Award shall be determined by the Administrator, and such terms and conditions may differ among individual Awards and grantees. Except in the case of Restricted Stock Units with a deferred settlement date that complies with Section 409A, at the end of the vesting period, the Restricted Stock Units, to the extent vested, shall be settled in the form of shares of Stock (or cash, to the extent explicitly provided for in the Award Certificate). Restricted Stock Units with deferred settlement dates are subject to Section 409A and shall contain such additional terms and conditions as the Administrator shall determine in its sole discretion in order to comply with the requirements of Section 409A.

(b) Election to Receive Restricted Stock Units in Lieu of Compensation. The Administrator may, in its sole discretion, permit a grantee to elect to receive a portion of future cash compensation otherwise due to such grantee in the form of an award of Restricted Stock Units. Any such election shall be made in writing and shall be delivered to the Company no later than the date specified by the Administrator and in accordance with Section 409A and such other rules and procedures established by the Administrator. Any such future cash compensation that the grantee elects to defer shall be converted to a fixed number of Restricted Stock Units based on the Fair Market Value of Stock on the date the compensation would otherwise have been paid to the grantee if such payment had not been deferred as provided herein. The Administrator shall have the sole right to determine whether and under what circumstances to permit such elections and to impose such limitations and other terms and conditions thereon as the Administrator deems appropriate. Any Restricted Stock Units that are elected to be received in lieu of cash compensation shall be fully vested, unless otherwise provided in the Award Certificate.

(c) Rights as a Stockholder. A grantee shall have the rights as a stockholder only as to shares of Stock acquired by the grantee upon settlement of Restricted Stock Units; provided, however, that the grantee may be credited with Dividend Equivalent Rights with respect to the stock units underlying his or her Restricted Stock Units, subject to the provisions of Section 11 and such terms and conditions as the Administrator may determine.

(d) Termination. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 16 below, in writing after the Award is issued, a grantee's right in all Restricted Stock Units that have not vested shall automatically terminate upon the grantee's termination of employment (or cessation of Service Relationship) with the Company and its Subsidiaries for any reason.

SECTION 9. UNRESTRICTED STOCK AWARDS

Grant or Sale of Unrestricted Stock. The Administrator may grant (or sell at par value or such higher purchase price determined by the Administrator) an Unrestricted Stock Award under the Plan. An Unrestricted Stock Award is an Award pursuant to which the grantee may receive shares of Stock free of any restrictions under the Plan. Unrestricted Stock Awards may be granted in respect of past services or other valid consideration, or in lieu of cash compensation due to such grantee.

SECTION 10. CASH-BASED AWARDS

Grant of Cash-Based Awards. The Administrator may grant Cash-Based Awards under the Plan. A Cash-Based Award is an Award that entitles the grantee to a payment in cash upon the attainment of specified performance goals. The Administrator shall determine the maximum duration of the Cash-Based Award, the amount of cash to which the Cash-Based Award pertains, the conditions upon which the Cash-Based Award shall become vested or payable, and such other provisions as the Administrator shall determine. Each Cash-Based Award shall specify a cash-denominated payment amount, formula or payment ranges as determined by the Administrator. Payment, if any, with respect to a Cash-Based Award shall be made in accordance with the terms of the Award and may be made in cash.

SECTION 11. DIVIDEND EQUIVALENT RIGHTS

(a) Dividend Equivalent Rights. The Administrator may grant Dividend Equivalent Rights under the Plan. A Dividend Equivalent Right is an Award entitling the grantee to receive credits based on cash dividends that would have been paid on the shares of Stock specified in the Dividend Equivalent Right (or other Award to which it relates) if such shares had been issued to the grantee. A Dividend Equivalent Right may be granted hereunder to any grantee as a component of an award of Restricted Stock Units or as a freestanding award. The terms and conditions of Dividend Equivalent Rights shall be specified in the Award Certificate. Dividend equivalents credited to the holder of a Dividend Equivalent Right may be paid currently or may be deemed to be reinvested in additional shares of Stock, which may thereafter accrue additional equivalents. Any such reinvestment shall be at Fair Market Value on the date of reinvestment or such other price as may then apply under a dividend reinvestment plan sponsored by the Company, if any. Dividend Equivalent Rights may be settled in cash or shares of Stock or a combination thereof, in a single installment or installments. A Dividend Equivalent Right granted as a component of an Award of Restricted Stock Units shall provide that such Dividend Equivalent Right shall be settled only upon settlement or payment of, or lapse of restrictions on, such other Award, and that such Dividend Equivalent Right shall expire or be forfeited or annulled under the same conditions as such other Award.

(b) Termination. Except as may otherwise be provided by the Administrator either in the Award Certificate or, subject to Section 16 below, in writing after the Award is issued, a grantee's rights in all Dividend Equivalent Rights shall automatically terminate upon the grantee's termination of employment (or cessation of Service Relationship) with the Company and its Subsidiaries for any reason.

SECTION 12. TRANSFERABILITY OF AWARDS

(a) Transferability. Except as provided in Section 12(b) below, during a grantee's lifetime, his or her Awards shall be exercisable only by the grantee, or by the grantee's legal representative or guardian in the event of the grantee's incapacity. No Awards shall be sold, assigned, transferred or otherwise encumbered or disposed of by a grantee other than by will or by the laws of descent and distribution or pursuant to a domestic relations order. No Awards shall be subject, in whole or in part, to attachment, execution, or levy of any kind, and any purported transfer in violation hereof shall be null and void.

(b) Administrator Action. Notwithstanding Section 12(a), the Administrator, in its discretion, may provide either in the Award Certificate regarding a given Award or by subsequent written approval that the grantee (who is an employee or director) may transfer his or her Non-Qualified Stock Options to his or her immediate family members, to trusts for the benefit of such family members, or to partnerships in which such family members are the only partners, provided that the transferee agrees in writing with the Company to be bound by all of the terms and conditions of this Plan and the applicable Award. In no event may an Award be transferred by a grantee for value.

(c) Family Member. For purposes of Section 12(b), "family member" shall mean a grantee's child, stepchild, grandchild, parent, stepparent, grandparent, spouse, former spouse, sibling, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including adoptive relationships, any person sharing the grantee's household (other than a tenant of the grantee), a trust in which these persons (or the grantee) have more than 50 percent of the beneficial interest, a foundation in which these persons (or the grantee) control the management of assets, and any other entity in which these persons (or the grantee) own more than 50 percent of the voting interests.

(d) Designation of Beneficiary. To the extent permitted by the Company, each grantee to whom an Award has been made under the Plan may designate a beneficiary or beneficiaries to exercise any Award or receive any payment under any Award payable on or after the grantee's death. Any such designation shall be on a form provided for that purpose by the Administrator and shall not be effective until received by the Administrator. If no beneficiary has been designated by a deceased grantee, or if the designated beneficiaries have predeceased the grantee, the beneficiary shall be the grantee's estate.

SECTION 13. TAX WITHHOLDING

(a) Payment by Grantee. Each grantee shall, no later than the date as of which the value of an Award or of any Stock or other amount received thereunder first becomes includable in the gross income of the grantee for income tax purposes, pay to the Company, or make

arrangements satisfactory to the Administrator regarding payment of, any Federal, state, or local taxes of any kind required by law to be withheld by the Company with respect to such income. The Company and its Subsidiaries shall, to the extent permitted by law, have the right to deduct any such taxes from any payment of any kind otherwise due to the grantee. The Company's obligation to deliver evidence of book entry (or stock certificates) to any grantee is subject to and conditioned on tax withholding obligations being satisfied by the grantee.

(b) Payment in Stock. The Administrator may require the Company's tax withholding obligation to be satisfied, in whole or in part, by the Company withholding from shares of Stock to be issued pursuant to any Award a number of shares with an aggregate Fair Market Value (as of the date the withholding is effected) that would satisfy the withholding amount due; provided, however, that the amount withheld does not exceed the maximum statutory tax rate or such lesser amount as is necessary to avoid liability accounting treatment. For purposes of share withholding, the Fair Market Value of withheld shares shall be determined in the same manner as the value of Stock includible in income of the grantees. The Administrator may also require the Company's tax withholding obligation to be satisfied, in whole or in part, by an arrangement whereby a certain number of shares of Stock issued pursuant to any Award are immediately sold and proceeds from such sale are remitted to the Company in an amount that would satisfy the withholding amount due.

SECTION 14. SECTION 409A AWARDS

Awards are intended to be exempt from Section 409A to the greatest extent possible and to otherwise comply with Section 409A. The Plan and all Awards shall be interpreted in accordance with such intent. To the extent that any Award is determined to constitute "nonqualified deferred compensation" within the meaning of Section 409A (a "409A Award"), the Award shall be subject to such additional rules and requirements as specified by the Administrator from time to time in order to comply with Section 409A. In this regard, if any amount under a 409A Award is payable upon a "separation from service" (within the meaning of Section 409A) to a grantee who is then considered a "specified employee" (within the meaning of Section 409A), then no such payment shall be made prior to the date that is the earlier of (i) six months and one day after the grantee's separation from service, or (ii) the grantee's death, but only to the extent such delay is necessary to prevent such payment from being subject to interest, penalties and/or additional tax imposed pursuant to Section 409A. Further, the settlement of any 409A Award may not be accelerated except to the extent permitted by Section 409A. The Company makes no representation that any or all of the payments or benefits described in the Plan will be exempt from or comply with Section 409A of the Code and makes no undertaking to preclude Section 409A of the Code from applying to any such payment. The grantee shall be solely responsible for the payment of any taxes and penalties incurred under Section 409A.

SECTION 15. TERMINATION OF SERVICE RELATIONSHIP, TRANSFER, LEAVE OF ABSENCE, ETC.

(a) Termination of Service Relationship. If the grantee's Service Relationship is with an Affiliate and such Affiliate ceases to be an Affiliate, the grantee shall be deemed to have terminated his or her Service Relationship for purposes of the Plan.

(b) For purposes of the Plan, the following events shall not be deemed a termination of a Service Relationship:

(i) a transfer to the employment of the Company from an Affiliate or from the Company to an Affiliate, or from one Affiliate to another; or

(ii) an approved leave of absence for military service or sickness, or for any other purpose approved by the Company, if the employee's right to re-employment is guaranteed either by a statute or by contract or under the policy pursuant to which the leave of absence was granted or if the Administrator otherwise so provides in writing.

SECTION 16. AMENDMENTS AND TERMINATION

The Board may, at any time, amend or discontinue the Plan and the Administrator may, at any time, amend or cancel any outstanding Award for the purpose of satisfying changes in law or for any other lawful purpose, but no such action shall materially and adversely affect rights under any outstanding Award without the holder's consent. The Administrator is specifically authorized to exercise its discretion to reduce the exercise price of outstanding Stock Options or Stock Appreciation Rights or effect the repricing of such Awards through cancellation and re-grants. To the extent required under the rules of any securities exchange or market system on which the Stock is listed, to the extent determined by the Administrator to be required by the Code to ensure that Incentive Stock Options granted under the Plan are qualified under Section 422 of the Code, Plan amendments shall be subject to approval by Company stockholders. Nothing in this Section 16 shall limit the Administrator's authority to take any action permitted pursuant to Section 3(b) or 3(c).

SECTION 17. STATUS OF PLAN

With respect to the portion of any Award that has not been exercised and any payments in cash, Stock or other consideration not received by a grantee, a grantee shall have no rights greater than those of a general creditor of the Company unless the Administrator shall otherwise expressly determine in connection with any Award or Awards. In its sole discretion, the Administrator may authorize the creation of trusts or other arrangements to meet the Company's obligations to deliver Stock or make payments with respect to Awards hereunder, provided that the existence of such trusts or other arrangements is consistent with the foregoing sentence.

SECTION 18. GENERAL PROVISIONS

(a) No Distribution. The Administrator may require each person acquiring Stock pursuant to an Award to represent to and agree with the Company in writing that such person is acquiring the shares without a view to distribution thereof.

(b) Issuance of Stock. To the extent certificated, stock certificates to grantees under this Plan shall be deemed delivered for all purposes when the Company or a stock transfer agent of the Company shall have mailed such certificates in the United States mail, addressed to the grantee, at the grantee's last known address on file with the Company. Uncertificated Stock shall be deemed delivered for all purposes when the Company or a Stock transfer agent of the Company shall have given to the grantee by electronic mail (with proof of receipt) or by United

States mail, addressed to the grantee, at the grantee's last known address on file with the Company, notice of issuance and recorded the issuance in its records (which may include electronic "book entry" records). Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any evidence of book entry or certificates evidencing shares of Stock pursuant to the exercise or settlement of any Award, unless and until the Administrator has determined, with advice of counsel (to the extent the Administrator deems such advice necessary or advisable), that the issuance and delivery is in compliance with all applicable laws, regulations of governmental authorities and, if applicable, the requirements of any exchange on which the shares of Stock are listed, quoted or traded. Any Stock issued pursuant to the Plan shall be subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with federal, state or foreign jurisdiction, securities or other laws, rules and quotation system on which the Stock is listed, quoted or traded. The Administrator may place legends on any Stock certificate or notations on any book entry to reference restrictions applicable to the Stock. In addition to the terms and conditions provided herein, the Administrator may require that an individual make such reasonable covenants, agreements, and representations as the Administrator, in its discretion, deems necessary or advisable in order to comply with any such laws, regulations, or requirements. The Administrator shall have the right to require any individual to comply with any timing or other restrictions with respect to the settlement or exercise of any Award, including a window-period limitation, as may be imposed in the discretion of the Administrator.

(c) No Fractional Shares. No fractional shares of Stock shall be issued or delivered pursuant to the Plan or any Award, and the Administrator shall determine whether cash, other securities or other property shall be paid or transferred in lieu of any fractional shares, or whether such fractional shares or any rights thereto shall be canceled, terminated or otherwise eliminated.

(d) Stockholder Rights. Until Stock is deemed delivered in accordance with Section 18(b), no right to vote or receive dividends or any other rights of a stockholder will exist with respect to shares of Stock to be issued in connection with an Award, notwithstanding the exercise of a Stock Option or any other action by the grantee with respect to an Award.

(e) Other Compensation Arrangements; No Employment Rights. Nothing contained in this Plan shall prevent the Board from adopting other or additional compensation arrangements, including trusts, and such arrangements may be either generally applicable or applicable only in specific cases. The adoption of this Plan and the grant of Awards do not confer upon any employee any right to continued employment with the Company or any Subsidiary.

(f) Trading Policy Restrictions. Option exercises and other Awards under the Plan shall be subject to the Company's insider trading policies and procedures, as in effect from time to time.

(g) Clawback Policy. A participant's rights with respect to any Award hereunder shall in all events be subject to reduction, cancellation, forfeiture or recoupment to the extent necessary to comply with (i) any right that the Company may have under any Company clawback, forfeiture or recoupment policy as in effect from time to time or other agreement or arrangement with a grantee, or (ii) applicable law.

SECTION 19. EFFECTIVE DATE OF PLAN

This Plan shall become effective upon the date immediately preceding the Registration Date following stockholder approval in accordance with applicable state law, the Company's bylaws and articles of incorporation, and applicable stock exchange rules. No grants of Stock Options and other Awards may be made hereunder after the tenth anniversary of the Effective Date and no grants of Incentive Stock Options may be made hereunder after the tenth anniversary of the date the Plan is approved by the Board.

SECTION 20. GOVERNING LAW

This Plan and all Awards and actions taken thereunder shall be governed by, and construed in accordance with, the General Corporation Law of the State of Delaware as to matters within the scope thereof, and as to all other matters shall be governed by and construed in accordance with the internal laws of the Commonwealth of Massachusetts applied without regard to conflict of law principles.

DATE APPROVED BY BOARD OF DIRECTORS: November 16, 2021

DATE APPROVED BY STOCKHOLDERS: December 3, 2021

**INCENTIVE STOCK OPTION AGREEMENT
UNDER THE VIGIL NEUROSCIENCE, INC.
2021 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: \$ _____
[FMV on Grant Date (110% of FMV if a 10% owner)]

Grant Date: _____

Expiration Date: _____
[No more than 10 years (5 years if a 10% owner)]

Pursuant to the Vigil Neuroscience, Inc. 2021 Stock Option and Incentive Plan, as amended through the date hereof (the "Plan"), Vigil Neuroscience, Inc. (the "Company") hereby grants to the Optionee named above an option (the "Stock Option") to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value \$0.0001 per share (the "Stock"), of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan.

1. Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 1 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall be exercisable with respect to the following number of Option Shares on the dates indicated below so long as the Optionee remains in a Service Relationship on such dates:

Incremental Number of Option Shares Exercisable*	Exercisability Date
(%)	
(%)	
(%)	
(%)	
(%)	

* Max. of \$100,000 per yr.

Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

2. Manner of Exercise.

(a) The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; or (iv) a combination of (i), (ii) and (iii) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the shares of Stock attested to.

(b) The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

(c) Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

3. Termination of Service Relationship. If the Optionee's Service Relationship terminates, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

(a) Termination Due to Death. If the Optionee's Service Relationship terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

(b) Termination Due to Disability. If the Optionee's Service Relationship terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such termination, may thereafter be exercised by the Optionee for a period of 12 months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

(c) Termination for Cause. If the Optionee's Service Relationship terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment or other service agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company or a Subsidiary.

(d) Other Termination. If the Optionee's Service Relationship terminates for any reason other than the Optionee's death, the Optionee's disability, or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's Service Relationship shall be conclusive and binding on the Optionee and his or her representatives or legatees.

4. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan,

including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

5. Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

6. Status of the Stock Option. This Stock Option is intended to qualify as an "incentive stock option" under Section 422 of the Internal Revenue Code of 1986, as amended (the "Code"), but the Company does not represent or warrant that this Stock Option qualifies as such. The Optionee should consult with his or her own tax advisors regarding the tax effects of this Stock Option and the requirements necessary to obtain favorable income tax treatment under Section 422 of the Code, including, but not limited to, holding period requirements and that ***this Stock Option must be exercised within three months after termination of employment as an employee (or 12 months in the case of death or disability) to qualify as an "incentive stock option."*** To the extent any portion of this Stock Option does not so qualify as an "incentive stock option," such portion shall be deemed to be a non-qualified stock option. If the Optionee intends to dispose or does dispose (whether by sale, gift, transfer or otherwise) of any Option Shares within the one-year period beginning on the date after the transfer of such shares to him or her, or within the two-year period beginning on the day after the grant of this Stock Option, he or she will so notify the Company within 30 days after such disposition.

7. Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the required tax withholding obligation to be satisfied, in whole or in part, by (i) withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the withholding amount due; or (ii) causing its transfer agent to sell from the number of shares of Stock to be issued to the Optionee, the number of shares of Stock necessary to satisfy the Federal, state and local taxes required by law to be withheld from the Optionee on account of such transfer.

8. No Obligation to Continue Service Relationship. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee's Service Relationship and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the Optionee's Service Relationship at any time.

9. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

10. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the “Relevant Companies”) may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the “Relevant Information”). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

11. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

VIGIL NEUROSCIENCE, INC.

By: _____
Title:

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

Optionee's Signature

Optionee's name and address:

2. Manner of Exercise.

(a) The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the shares of Stock attested to.

(b) The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

(c) Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

3. Termination of Service Relationship. If the Optionee's Service Relationship terminates, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

(a) Termination Due to Death. If the Optionee's Service Relationship terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

(b) Termination Due to Disability. If the Optionee's Service Relationship terminates by reason of the Optionee's disability (as determined by the Administrator), any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of such termination, may thereafter be exercised by the Optionee for a period of 12 months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

(c) Termination for Cause. If the Optionee's Service Relationship terminates for Cause, any portion of this Stock Option outstanding on such date shall terminate immediately and be of no further force and effect. For purposes hereof, "Cause" shall mean, unless otherwise provided in an employment or other service agreement between the Company and the Optionee, a determination by the Administrator that the Optionee shall be dismissed as a result of (i) any material breach by the Optionee of any agreement between the Optionee and the Company; (ii) the conviction of, indictment for or plea of nolo contendere by the Optionee to a felony or a crime involving moral turpitude; or (iii) any material misconduct or willful and deliberate non-performance (other than by reason of disability) by the Optionee of the Optionee's duties to the Company or a Subsidiary.

(d) Other Termination. If the Optionee's Service Relationship terminates for any reason other than the Optionee's death, the Optionee's disability or Cause, and unless otherwise determined by the Administrator, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of three months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

The Administrator's determination of the reason for termination of the Optionee's Service Relationship shall be conclusive and binding on the Optionee and his or her representatives or legatees.

4. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

5. Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

6. Tax Withholding. The Optionee shall, not later than the date as of which the exercise of this Stock Option becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the required tax withholding obligation to be satisfied, in whole or in part, by (i) withholding from shares of Stock to be issued to the Optionee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the withholding amount due; or (ii) causing its transfer agent to sell from the number of shares of Stock to be issued to the Optionee, the number of shares of Stock necessary to satisfy the Federal, state and local taxes required by law to be withheld from the Optionee on account of such transfer.

7. No Obligation to Continue Service Relationship. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Optionee's Service Relationship and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the Optionee's Service Relationship at any time.

8. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

9. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

10. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

VIGIL NEUROSCIENCE, INC.

By: _____
Title:

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

Optionee's Signature

Optionee's name and address:

**NON-QUALIFIED STOCK OPTION AGREEMENT
FOR NON-EMPLOYEE DIRECTORS
UNDER THE VIGIL NEUROSCIENCE, INC.
2021 STOCK OPTION AND INCENTIVE PLAN**

Name of Optionee: _____

No. of Option Shares: _____

Option Exercise Price per Share: \$ _____
[FMV on Grant Date]

Grant Date: _____

Expiration Date: _____
[No more than 10 years]

Pursuant to the Vigil Neuroscience, Inc. 2021 Stock Option and Incentive Plan, as amended through the date hereof (the “Plan”), Vigil Neuroscience, Inc. (the “Company”) hereby grants to the Optionee named above, who is a Non-Employee Director of the Company but is not an employee of the Company, an option (the “Stock Option”) to purchase on or prior to the Expiration Date specified above all or part of the number of shares of Common Stock, par value \$0.0001 per share (the “Stock”), of the Company specified above at the Option Exercise Price per Share specified above subject to the terms and conditions set forth herein and in the Plan. This Stock Option is not intended to be an “incentive stock option” under Section 422 of the Internal Revenue Code of 1986, as amended.

1. Exercisability Schedule. No portion of this Stock Option may be exercised until such portion shall have become exercisable. Except as set forth below, and subject to the discretion of the Administrator (as defined in Section 1 of the Plan) to accelerate the exercisability schedule hereunder, this Stock Option shall be exercisable with respect to the following number of Option Shares on the dates indicated below so long as the Optionee remains in a Service Relationship on such dates:

Incremental Number of Option Shares Exercisable	Exercisability Date
(%)	
(%)	
(%)	
(%)	

Notwithstanding anything to the contrary herein or in the Plan, all outstanding Option Shares shall become fully exercisable upon a Sale Event; provided that the Optionee remains in a

Service Relationship through the consummation of the Sale Event. Once exercisable, this Stock Option shall continue to be exercisable at any time or times prior to the close of business on the Expiration Date, subject to the provisions hereof and of the Plan.

2. Manner of Exercise.

(a) The Optionee may exercise this Stock Option only in the following manner: from time to time on or prior to the Expiration Date of this Stock Option, the Optionee may give written notice to the Administrator of his or her election to purchase some or all of the Option Shares purchasable at the time of such notice. This notice shall specify the number of Option Shares to be purchased.

Payment of the purchase price for the Option Shares may be made by one or more of the following methods: (i) in cash, by certified or bank check or other instrument acceptable to the Administrator; (ii) through the delivery (or attestation to the ownership) of shares of Stock that have been purchased by the Optionee on the open market or that are beneficially owned by the Optionee and are not then subject to any restrictions under any Company plan and that otherwise satisfy any holding periods as may be required by the Administrator; (iii) by the Optionee delivering to the Company a properly executed exercise notice together with irrevocable instructions to a broker to promptly deliver to the Company cash or a check payable and acceptable to the Company to pay the option purchase price, provided that in the event the Optionee chooses to pay the option purchase price as so provided, the Optionee and the broker shall comply with such procedures and enter into such agreements of indemnity and other agreements as the Administrator shall prescribe as a condition of such payment procedure; (iv) by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; or (v) a combination of (i), (ii), (iii) and (iv) above. Payment instruments will be received subject to collection.

The transfer to the Optionee on the records of the Company or of the transfer agent of the Option Shares will be contingent upon (i) the Company's receipt from the Optionee of the full purchase price for the Option Shares, as set forth above, (ii) the fulfillment of any other requirements contained herein or in the Plan or in any other agreement or provision of laws, and (iii) the receipt by the Company of any agreement, statement or other evidence that the Company may require to satisfy itself that the issuance of Stock to be purchased pursuant to the exercise of Stock Options under the Plan and any subsequent resale of the shares of Stock will be in compliance with applicable laws and regulations. In the event the Optionee chooses to pay the purchase price by previously-owned shares of Stock through the attestation method, the number of shares of Stock transferred to the Optionee upon the exercise of the Stock Option shall be net of the shares of Stock attested to.

(b) The shares of Stock purchased upon exercise of this Stock Option shall be transferred to the Optionee on the records of the Company or of the transfer agent upon compliance to the satisfaction of the Administrator with all requirements under applicable laws or regulations in connection with such transfer and with the requirements hereof and of the Plan. The determination of the Administrator as to such compliance shall be final and binding on the Optionee. The Optionee shall not be deemed to be the holder of, or to have any of the rights of a

holder with respect to, any shares of Stock subject to this Stock Option unless and until this Stock Option shall have been exercised pursuant to the terms hereof, the Company or the transfer agent shall have transferred the shares to the Optionee, and the Optionee's name shall have been entered as the stockholder of record on the books of the Company. Thereupon, the Optionee shall have full voting, dividend and other ownership rights with respect to such shares of Stock.

(c) Notwithstanding any other provision hereof or of the Plan, no portion of this Stock Option shall be exercisable after the Expiration Date hereof.

3. Termination of Service Relationship. If the Optionee's Service Relationship terminates, the period within which to exercise the Stock Option may be subject to earlier termination as set forth below.

(a) Termination Due to Death. If the Optionee's Service Relationship terminates by reason of the Optionee's death, any portion of this Stock Option outstanding on such date, to the extent exercisable on the date of death, may thereafter be exercised by the Optionee's legal representative or legatee for a period of 12 months from the date of death or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of death shall terminate immediately and be of no further force or effect.

(b) Other Termination. If the Optionee's Service Relationship terminates for any reason other than the Optionee's death, any portion of this Stock Option outstanding on such date may be exercised, to the extent exercisable on the date of termination, for a period of six months from the date of termination or until the Expiration Date, if earlier. Any portion of this Stock Option that is not exercisable on the date of termination shall terminate immediately and be of no further force or effect.

4. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Stock Option shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

5. Transferability. This Agreement is personal to the Optionee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution. This Stock Option is exercisable, during the Optionee's lifetime, only by the Optionee, and thereafter, only by the Optionee's legal representative or legatee.

6. No Obligation to Continue Service Relationship. Neither the Plan nor this Stock Option confers upon the Optionee any rights with respect to a continued Service Relationship.

7. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Stock Option and supersedes all prior agreements and discussions between the parties concerning such subject matter.

8. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Optionee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Optionee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Optionee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

9. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Optionee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

VIGIL NEUROSCIENCE, INC.

By: _____
Title:

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Optionee (including through an online acceptance process) is acceptable.

Dated: _____

Optionee's Signature

Optionee's name and address:

**RESTRICTED STOCK UNIT AWARD AGREEMENT
FOR COMPANY EMPLOYEES
UNDER THE VIGIL NEUROSCIENCE, INC.
2021 STOCK OPTION AND INCENTIVE PLAN**

Name of Grantee: _____
No. of Restricted Stock Units: _____
Grant Date: _____

Pursuant to the Vigil Neuroscience, Inc. 2021 Stock Option and Incentive Plan, as amended through the date hereof (the "Plan"), Vigil Neuroscience, Inc. (the "Company") hereby grants an award of the number of Restricted Stock Units listed above (an "Award") to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value \$0.0001 per share (the "Stock"), of the Company.

1. Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

2. Vesting of Restricted Stock Units. The restrictions and conditions of Paragraph 1 of this Agreement shall lapse on the Vesting Date or Dates specified in the following schedule so long as the Grantee remains in a Service Relationship on such Vesting Dates. If a series of Vesting Dates is specified, then the restrictions and conditions in Paragraph 1 shall lapse only with respect to the number of Restricted Stock Units specified as vested on such date.

<u>Incremental Number of Restricted Stock Units Vested</u>	<u>Vesting Date</u>
(%)	
(%)	
(%)	
(%)	

The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

3. Termination of Service Relationship. If the Grantee's Service Relationship terminates for any reason (including death or disability) prior to the satisfaction of the vesting conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

4. Issuance of Shares of Stock. As soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

5. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

6. Tax Withholding. The Grantee shall, not later than the date as of which the receipt of this Award becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the required tax withholding obligation to be satisfied, in whole or in part, by (i) withholding from shares of Stock to be issued to the Grantee a number of shares of Stock with an aggregate Fair Market Value that would satisfy the withholding amount due; or (ii) causing its transfer agent to sell from the number of shares of Stock to be issued to the Grantee, the number of shares of Stock necessary to satisfy the Federal, state and local taxes required by law to be withheld from the Grantee on account of such transfer.

7. Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as “short-term deferrals” as described in Section 409A of the Code.

8. No Obligation to Continue Service Relationship. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee’s Service Relationship and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the Grantee’s Service Relationship at any time.

9. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

10. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the “Relevant Companies”) may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the “Relevant Information”). By entering

into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

11. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

VIGIL NEUROSCIENCE, INC.

By: _____
Title:

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

Grantee's Signature

Grantee's name and address:

**RESTRICTED STOCK UNIT AWARD AGREEMENT
FOR NON-EMPLOYEE DIRECTORS
UNDER THE VIGIL NEUROSCIENCE, INC.
2021 STOCK OPTION AND INCENTIVE PLAN**

Name of Grantee: _____
No. of Restricted Stock Units: _____
Grant Date: _____

Pursuant to the Vigil Neuroscience, Inc. 2021 Stock Option and Incentive Plan, as amended through the date hereof (the “Plan”), Vigil Neuroscience, Inc. (the “Company”) hereby grants an award of the number of Restricted Stock Units listed above (an “Award”) to the Grantee named above. Each Restricted Stock Unit shall relate to one share of Common Stock, par value \$0.0001 per share (the “Stock”), of the Company.

1. Restrictions on Transfer of Award. This Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of by the Grantee, and any shares of Stock issuable with respect to the Award may not be sold, transferred, pledged, assigned or otherwise encumbered or disposed of until (i) the Restricted Stock Units have vested as provided in Paragraph 2 of this Agreement and (ii) shares of Stock have been issued to the Grantee in accordance with the terms of the Plan and this Agreement.

2. Vesting of Restricted Stock Units. The restrictions and conditions of Paragraph 1 of this Agreement shall lapse on the Vesting Date or Dates specified in the following schedule so long as the Grantee remains in a Service Relationship on such Vesting Dates. If a series of Vesting Dates is specified, then the restrictions and conditions in Paragraph 1 shall lapse only with respect to the number of Restricted Stock Units specified as vested on such date.

<u>Incremental Number of Restricted Stock Units Vested</u>	<u>Vesting Date</u>
(%)	
(%)	
(%)	
(%)	

Notwithstanding anything to the contrary herein or in the Plan, all outstanding Restricted Stock Units shall become fully vested upon a Sale Event; provided that the Grantee remains in a Service Relationship through the consummation of the Sale Event. The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 2.

3. Termination of Service Relationship. If the Grantee’s Service Relationship terminates for any reason (including death or disability) prior to the satisfaction of the vesting

conditions set forth in Paragraph 2 above, any Restricted Stock Units that have not vested as of such date shall automatically and without notice terminate and be forfeited, and neither the Grantee nor any of his or her successors, heirs, assigns, or personal representatives will thereafter have any further rights or interests in such unvested Restricted Stock Units.

4. Issuance of Shares of Stock. As soon as practicable following each Vesting Date (but in no event later than two and one-half months after the end of the year in which the Vesting Date occurs), the Company shall issue to the Grantee the number of shares of Stock equal to the aggregate number of Restricted Stock Units that have vested pursuant to Paragraph 2 of this Agreement on such date and the Grantee shall thereafter have all the rights of a stockholder of the Company with respect to such shares.

5. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Agreement shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

6. Section 409A of the Code. This Agreement shall be interpreted in such a manner that all provisions relating to the settlement of the Award are exempt from the requirements of Section 409A of the Code as “short-term deferrals” as described in Section 409A of the Code.

7. No Obligation to Continue Service Relationship. Neither the Plan nor this Award confers upon the Grantee any rights with respect to a continued Service Relationship.

8. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

9. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the “Relevant Companies”) may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the “Relevant Information”). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

10. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

VIGIL NEUROSCIENCE, INC.

By: _____
Title:

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

Grantee's Signature

Grantee's name and address:

**RESTRICTED STOCK AWARD AGREEMENT
UNDER THE VIGIL NEUROSCIENCE, INC.
2021 STOCK OPTION AND INCENTIVE PLAN**

Name of Grantee: _____

No. of Shares: _____

Grant Date: _____

Pursuant to the Vigil Neuroscience, Inc. 2021 Stock Option and Incentive Plan, as amended through the date hereof (the "Plan"), Vigil Neuroscience, Inc. (the "Company") hereby grants a Restricted Stock Award (an "Award") to the Grantee named above. Upon acceptance of this Award, the Grantee shall receive the number of shares of Common Stock, par value \$0.0001 per share (the "Stock"), of the Company specified above, subject to the restrictions and conditions set forth herein and in the Plan. The Company acknowledges the receipt from the Grantee of consideration with respect to the par value of the Stock in the form of cash, past or future services rendered to the Company by the Grantee or such other form of consideration as is acceptable to the Administrator.

1. Award. The shares of Restricted Stock awarded hereunder shall be issued and held by the Company's transfer agent in book entry form, and the Grantee's name shall be entered as the stockholder of record on the books of the Company. Thereupon, the Grantee shall have all the rights of a stockholder with respect to such shares, including voting and dividend rights, subject, however, to the restrictions and conditions specified in Paragraph 2 below. The Grantee shall (i) sign and deliver to the Company a copy of this Award Agreement and (ii) deliver to the Company a stock power endorsed in blank.

2. Restrictions and Conditions.

(a) Any book entries for the shares of Restricted Stock granted herein shall bear an appropriate legend, as determined by the Administrator in its sole discretion, to the effect that such shares are subject to restrictions as set forth herein and in the Plan.

(b) Shares of Restricted Stock granted herein may not be sold, assigned, transferred, pledged or otherwise encumbered or disposed of by the Grantee prior to the applicable Vesting Date indicated in Paragraph 3 below.

(c) If the Grantee's Service Relationship is terminated for any reason (including due to death or disability) prior to vesting of shares of Restricted Stock granted herein, all shares of Restricted Stock shall immediately and automatically be forfeited and returned to the Company.

3. Vesting of Restricted Stock. The restrictions and conditions in Paragraph 2 of this Agreement shall lapse on the Vesting Date or Dates specified in the following schedule so long as the Grantee remains in a Service Relationship on such Vesting Dates. If a series of Vesting Dates is specified, then the restrictions and conditions in Paragraph 2 shall lapse only with respect to the number of shares of Restricted Stock specified as vested on such date.

<u>Incremental Number of Shares Vested</u>	<u>Vesting Date</u>
(%)	
(%)	
(%)	
(%)	

Subsequent to such Vesting Date or Dates, the shares of Stock on which all restrictions and conditions have lapsed shall no longer be deemed Restricted Stock. [Notwithstanding anything to the contrary herein or in the Plan, all outstanding shares of Restricted Stock shall become fully vested upon a Sale Event; provided that the Grantee remains in a Service Relationship through the consummation of the Sale Event.]¹ The Administrator may at any time accelerate the vesting schedule specified in this Paragraph 3.

4. Dividends. The Grantee shall be entitled to receive all dividends or other distributions paid with respect to the shares of Restricted Stock.

5. Incorporation of Plan. Notwithstanding anything herein to the contrary, this Award shall be subject to and governed by all the terms and conditions of the Plan, including the powers of the Administrator set forth in Section 2(b) of the Plan. Capitalized terms in this Agreement shall have the meaning specified in the Plan, unless a different meaning is specified herein.

6. Transferability. This Agreement is personal to the Grantee, is non-assignable and is not transferable in any manner, by operation of law or otherwise, other than by will or the laws of descent and distribution.

7. Tax Withholding. The Grantee shall, not later than the date as of which the receipt of this Award becomes a taxable event for Federal income tax purposes, pay to the Company or make arrangements satisfactory to the Administrator for payment of any Federal, state, and local taxes required by law to be withheld on account of such taxable event. The Company shall have the authority to cause the required tax withholding obligation to be satisfied, in whole or in part, by (i) withholding from shares of Stock to be issued or released by the transfer agent a number of shares of Stock with an aggregate Fair Market Value that would satisfy the withholding amount due; or (ii) causing its transfer agent to sell from the number of shares of Stock to be issued or released by the transfer agent, the number of shares of Stock necessary to satisfy the Federal, state and local taxes required by law to be withheld from the Grantee on account of such transfer.

8. Election Under Section 83(b). The Grantee and the Company hereby agree that the Grantee may, within 30 days following the Grant Date of this Award, file with the Internal

¹ **Note to Draft:** To be included only in grants made to Non-Employee Directors.

Revenue Service and the Company an election under Section 83(b) of the Code. In the event the Grantee makes such an election, he or she agrees to provide a copy of the election to the Company. The Grantee acknowledges that he or she is responsible for obtaining the advice of his or her tax advisors with regard to the Section 83(b) election and that he or she is relying solely on such advisors and not on any statements or representations of the Company or any of its agents with regard to such election.

9. No Obligation to Continue Service Relationship. Neither the Company nor any Subsidiary is obligated by or as a result of the Plan or this Agreement to continue the Grantee in a Service Relationship and neither the Plan nor this Agreement shall interfere in any way with the right of the Company or any Subsidiary to terminate the Grantee's Service Relationship at any time.

10. Integration. This Agreement constitutes the entire agreement between the parties with respect to this Award and supersedes all prior agreements and discussions between the parties concerning such subject matter.

11. Data Privacy Consent. In order to administer the Plan and this Agreement and to implement or structure future equity grants, the Company, its subsidiaries and affiliates and certain agents thereof (together, the "Relevant Companies") may process any and all personal or professional data, including but not limited to Social Security or other identification number, home address and telephone number, date of birth and other information that is necessary or desirable for the administration of the Plan and/or this Agreement (the "Relevant Information"). By entering into this Agreement, the Grantee (i) authorizes the Company to collect, process, register and transfer to the Relevant Companies all Relevant Information; (ii) waives any privacy rights the Grantee may have with respect to the Relevant Information; (iii) authorizes the Relevant Companies to store and transmit such information in electronic form; and (iv) authorizes the transfer of the Relevant Information to any jurisdiction in which the Relevant Companies consider appropriate. The Grantee shall have access to, and the right to change, the Relevant Information. Relevant Information will only be used in accordance with applicable law.

12. Notices. Notices hereunder shall be mailed or delivered to the Company at its principal place of business and shall be mailed or delivered to the Grantee at the address on file with the Company or, in either case, at such other address as one party may subsequently furnish to the other party in writing.

VIGIL NEUROSCIENCE, INC.

By: _____
Title:

The foregoing Agreement is hereby accepted and the terms and conditions thereof hereby agreed to by the undersigned. Electronic acceptance of this Agreement pursuant to the Company's instructions to the Grantee (including through an online acceptance process) is acceptable.

Dated: _____

Grantee's Signature

Grantee's name and address:

VIGIL NEUROSCIENCE, INC.
2021 EMPLOYEE STOCK PURCHASE PLAN

The purpose of the Vigil Neuroscience, Inc. 2021 Employee Stock Purchase Plan (the “Plan”) is to provide eligible employees of Vigil Neuroscience, Inc. (the “Company”) and each Designated Subsidiary (as defined in Section 11) with opportunities to purchase shares of the Company’s common stock, par value \$0.0001 per share (the “Common Stock”). An aggregate of 286,127 shares of Common Stock have been approved and reserved for this purpose, plus on January 1, 2023, and each January 1 thereafter through January 1, 2032, the number of shares of Common Stock reserved and available for issuance under the Plan shall be cumulatively increased by the least of (i) 286,127 shares of Common Stock, (ii) one percent (1%) of the number of shares of Common Stock issued and outstanding on the immediately preceding December 31st, or (iii) such number of shares of Common Stock as determined by the Administrator.

The Plan includes two components: a Code Section 423 Component (the “423 Component”) and a non-Code Section 423 Component (the “Non-423 Component”). It is intended for the 423 Component to constitute an “employee stock purchase plan” within the meaning of Section 423(b) of the U.S. Internal Revenue Code of 1986, as amended (the “Code”), and the 423 Component shall be interpreted in accordance with that intent. Under the Non-423 Component, which does not qualify as an “employee stock purchase plan” within the meaning of Section 423(b) of the Code, options will be granted pursuant to rules, procedures or sub-plans adopted by the Administrator designed to achieve tax, securities laws or other objectives for eligible employees. Except as otherwise provided herein or by the Administrator, the Non-423 Component will operate and be administered in the same manner as the 423 Component.

Unless otherwise defined herein, capitalized terms in this Plan shall have the meanings ascribed to them in Section 11.

1. Administration. The Plan will be administered by the person or persons (the “Administrator”) appointed by the Company’s Board of Directors (the “Board”) for such purpose. The Administrator has authority at any time to: (i) adopt, alter and repeal such rules, guidelines and practices for the administration of the Plan and for its own acts and proceedings as it shall deem advisable; (ii) interpret the terms and provisions of the Plan; (iii) make all determinations it deems advisable for the administration of the Plan; (iv) decide all disputes arising in connection with the Plan; and (v) otherwise supervise the administration of the Plan. All interpretations and decisions of the Administrator shall be binding on all persons, including the Company and the Participants. No member of the Board or individual exercising administrative authority with respect to the Plan shall be liable for any action or determination made in good faith with respect to the Plan or any option granted hereunder.

2. Offerings. The Company may make one or more offerings to eligible employees to purchase Common Stock under the Plan (“Offerings”). The initial Offering will begin and end on dates to be determined by the Administrator. Thereafter, unless otherwise determined by the Administrator, an Offering will begin on the first business day occurring on or after each May 1 and November 1 and will end on the last business day occurring on or before the following October 31 and April 30, respectively. The Administrator may, in its discretion, designate a different period for any Offering, provided that no Offering shall exceed twenty-four (24) months in duration or overlap any other Offering.

3. Eligibility. Except as otherwise determined by the Administrator in advance of an Offering, all individuals classified as employees on the payroll records of the Company and each Designated Subsidiary are eligible to participate in any one or more of the Offerings under the Plan, provided that as of the first day of the applicable Offering (the "Offering Date") they are customarily employed by the Company or a Designated Subsidiary. Notwithstanding any other provision herein, individuals who are not contemporaneously classified as employees of the Company or a Designated Subsidiary for purposes of the Company's or applicable Designated Subsidiary's payroll system are not considered to be eligible employees of the Company or any Designated Subsidiary and shall not be eligible to participate in the Plan. In the event any such individuals are reclassified as employees of the Company or a Designated Subsidiary for any purpose, including, without limitation, common law or statutory employees, by any action of any third party, including, without limitation, any government agency, or as a result of any private lawsuit, action or administrative proceeding, such individuals shall, notwithstanding such reclassification, remain ineligible for participation. Notwithstanding the foregoing, the exclusive means for individuals who are not contemporaneously classified as employees of the Company or a Designated Subsidiary on the Company's or Designated Subsidiary's payroll system to become eligible to participate in this Plan is through an amendment to this Plan, duly executed by the Company, which specifically renders such individuals eligible to participate herein.

4. Participation.

(a) Participants. An eligible employee who is not a Participant in any prior Offering may participate in a subsequent Offering by submitting an enrollment form to the Company or an agent designated by the Company (in the manner described in Section 4(b)) at least fifteen (15) business days before the Offering Date (or by such other deadline as shall be established by the Administrator for the Offering).

(b) Enrollment. The enrollment form (which may be in an electronic format or such other method as determined by the Company in accordance with the Company's practices) will (a) state a whole percentage or amount to be deducted from an eligible employee's Compensation (as defined in Section 11) per pay period, (b) authorize the purchase of Common Stock in each Offering in accordance with the terms of the Plan and (c) specify the exact name or names in which shares of Common Stock purchased for such individual are to be issued pursuant to Section 10. An employee who does not enroll in accordance with these procedures will be deemed to have waived the right to participate. Unless a Participant files a new enrollment form or withdraws from the Plan, such Participant's deductions and purchases will continue at the same percentage or amount of Compensation for future Offerings, provided the Participant remains eligible.

(c) Notwithstanding the foregoing, participation in the Plan will neither be permitted nor be denied contrary to the requirements of the Code.

5. Employee Contributions. Each eligible employee may authorize payroll deductions at a minimum of one percent (1%) up to a maximum of fifteen percent (15%) of such

employee's Compensation for each pay period or such other maximum as may be specified by the Administrator in advance of an Offering. The Company will maintain book accounts showing the amount of payroll deductions made by each Participant for each Offering. No interest will accrue or be paid on payroll deductions.

6. Deduction Changes. Except as may be determined by the Administrator in advance of an Offering, a Participant may not increase or decrease his or her payroll deduction during any Offering, but may increase or decrease his or her payroll deduction with respect to the next Offering (subject to the limitations of Section 5) by filing a new enrollment form at least fifteen (15) business days before the next Offering Date (or by such other deadline as shall be established by the Administrator for the Offering). The Administrator may, in advance of any Offering, establish rules permitting a Participant to increase, decrease or terminate his or her payroll deduction during an Offering.

7. Withdrawal. A Participant may withdraw from participation in the Plan by delivering a written notice of withdrawal to the Company or an agent designated by the Company in accordance with such procedures as may be established by the Administrator. The Participant's withdrawal will be effective as of the next business day. Following a Participant's withdrawal, the Company will promptly refund such Participant's entire account balance under the Plan to the Participant (after payment for any Common Stock purchased before the effective date of withdrawal). Partial withdrawals are not permitted. Such a Participant may not begin participation again during the remainder of the Offering, but may enroll in a subsequent Offering in accordance with Section 4.

8. Grant of Options. On each Offering Date, the Company will grant to each eligible employee who is then a Participant in the Plan an option ("Option") to purchase on the last day of such Offering (the "Exercise Date"), at the Option Price hereinafter provided for, the lowest of (a) a number of shares of Common Stock determined by dividing such Participant's accumulated payroll deductions on such Exercise Date by the Option Price (as defined herein), (b) the number of shares of Common Stock determined by dividing \$25,000 by the Fair Market Value of the Common Stock on the Offering Date for such Offering; or (c) such other lesser maximum number of shares as shall have been established by the Administrator in advance of the Offering; provided, however, that such Option shall be subject to the limitations set forth below. Each Participant's Option shall be exercisable only to the extent of such Participant's accumulated payroll deductions on the Exercise Date. The purchase price for each share purchased under each Option (the "Option Price") will be eighty-five percent (85%) of the Fair Market Value of the Common Stock on the Offering Date or the Exercise Date, whichever is less.

Notwithstanding the foregoing, no Participant may be granted an Option hereunder if such Participant, immediately after the Option was granted, would be treated as owning stock possessing five percent (5%) or more of the total combined voting power or value of all classes of stock of the Company or any Parent or Subsidiary (as defined in Section 11). For purposes of the preceding sentence, the attribution rules of Section 424(d) of the Code shall apply in determining the stock ownership of a Participant, and all stock which the Participant has a contractual right to purchase shall be treated as stock owned by the Participant. In addition, no Participant may be granted an Option which permits such Participant rights to purchase stock under the Plan, and any other employee stock purchase plan of the Company and its Parents and

Subsidiaries, to accrue at a rate which exceeds \$25,000 of the fair market value of such stock (determined on the option grant date or dates) for each calendar year in which the Option is outstanding at any time. The purpose of the limitation in the preceding sentence is to comply with Section 423(b)(8) of the Code and shall be applied taking Options into account in the order in which they were granted.

9. Exercise of Option and Purchase of Shares. Each employee who continues to be a Participant in the Plan on the Exercise Date shall be deemed to have exercised his or her Option on such date and shall acquire from the Company such number of whole shares of Common Stock reserved for the purpose of the Plan as his or her accumulated payroll deductions on such date will purchase at the Option Price, subject to any other limitations contained in the Plan. Any amount remaining in a Participant's account at the end of an Offering solely by reason of the inability to purchase a fractional share will be carried forward to the next Offering; any other balance remaining in a Participant's account at the end of an Offering will be refunded to the Participant promptly.

10. Issuance of Certificates. Certificates or book-entries at the Company's transfer agent representing shares of Common Stock purchased under the Plan may be issued only in the name of the Participant, in the name of the Participant and another person of legal age as joint tenants with rights of survivorship, or in the name of a broker authorized by the Participant or the Participant's nominee for such purpose.

11. Definitions.

The term "Compensation" means the regular or basic rate of compensation. The Administrator shall have the discretion to determine the application of this definition.

The term "Designated Subsidiary" means any present or future Subsidiary (as defined below) that has been designated by the Administrator to participate in the Plan. The Administrator may so designate any Subsidiary, or revoke any such designation, at any time and from time to time, either before or after the Plan is approved by the stockholders, and may further designate such companies or Participants as participating in the 423 Component or the Non-423 Component. The Administrator may also determine which Subsidiaries or eligible employees may be excluded from participation in the Plan, to the extent consistent with Section 423 of the Code or as implemented under the Non-423 Component, and determine which Designated Subsidiary or Subsidiaries will participate in separate Offerings (to the extent that the Company makes separate Offerings). For purposes of the 423 Component, only the Company and its Subsidiaries may be Designated Subsidiaries; provided, however, that at any given time, a Subsidiary that is a Designated Subsidiary under the 423 Component will not be a Designated Subsidiary under the Non-423 Component. The current list of Designated Subsidiaries is attached hereto as Appendix A.

The term "Fair Market Value of the Common Stock" on any given date means the fair market value of the Common Stock determined in good faith by the Administrator; provided, however, that if the Common Stock is admitted to quotation on the National Association of Securities Dealers Automated Quotation System ("NASDAQ"), the NASDAQ Global Market, The New York Stock Exchange or another national securities exchange, the determination shall

be made by reference to the closing price on such date. If there is no closing price for such date, the determination shall be made by reference to the last date preceding such date for which there is a closing price.

The term “Initial Public Offering” means the first underwritten, firm commitment public offering pursuant to an effective registration statement under the U.S. Securities Act of 1933, as amended, covering the offer and sale by the Company of its Common Stock.

The term “New Exercise Date” means a new Exercise Date if the Administrator shortens any Offering then in progress.

The term “Parent” means a “parent corporation” with respect to the Company, as defined in Section 424(e) of the Code.

The term “Participant” means an individual who is eligible as determined in Section 3 and who has complied with the provisions of Section 4.

The term “Registration Date” means the date on which the registration statement on Form S-1 that is filed by the Company with respect to its Initial Public Offering is declared effective by the U.S. Securities and Exchange Commission.

The term “Sale Event” means (i) the sale of all or substantially all of the assets of the Company on a consolidated basis to an unrelated person or entity, (ii) a merger, reorganization, statutory share exchange, consolidation, or similar transaction pursuant to which the holders of the Company’s outstanding voting power and outstanding stock immediately prior to such transaction do not own a majority of the outstanding voting power and outstanding stock or other equity interests of the resulting or successor entity (or its ultimate parent, if applicable) immediately upon completion of such transaction, (iii) the sale of all of the Common Stock to an unrelated person, entity or group thereof acting in concert, (iv) any other transaction in which the owners of the Company’s outstanding voting power immediately prior to such transaction do not own at least a majority of the outstanding voting power of the Company or any successor entity immediately upon completion of the transaction other than as a result of the acquisition of securities directly from the Company, or (v) the approval by the stockholders of the Company of a complete liquidation or dissolution of the Company.

The term “Subsidiary” means a “subsidiary corporation” with respect to the Company, as defined in Section 424(f) of the Code.

12. Rights on Termination of Employment. If a Participant’s employment terminates for any reason before the Exercise Date for any Offering, no payroll deduction will be taken from any pay due and owing to the Participant and the balance in the Participant’s account will be paid to such Participant or, in the case of such Participant’s death, to the Participant’s designated beneficiary as if such Participant had withdrawn from the Plan under Section 7. An employee will be deemed to have terminated employment, for this purpose, if the corporation that employs the Participant, having been a Designated Subsidiary, ceases to be a Subsidiary, or if the employee is transferred to any corporation other than the Company or a Designated Subsidiary; provided, however, that if a Participant transfers from an Offering under the 423

Component to an Offering under the Non-423 Component, the exercise of the Participant's Option will be qualified under the 423 Component only to the extent that such exercise complies with Section 423 of the Code. If a Participant transfers from an Offering under the Non-423 Component to an Offering under the 423 Component, the exercise of the Participant's Option will remain non-qualified under the Non-423 Component. An employee will not be deemed to have terminated employment for this purpose if the employee is on an approved leave of absence for military service or sickness or for any other purpose approved by the Company, if the employee's right to reemployment is guaranteed either by a statute or by contract or under the policy pursuant to which the leave of absence was granted or if the Administrator otherwise provides in writing.

13. Special Rules and Sub-Plans. Notwithstanding anything herein to the contrary, the Administrator may adopt special rules or sub-plans applicable to the employees of a particular Designated Subsidiary whenever the Administrator determines that such rules are necessary or appropriate for the implementation of the Plan in a jurisdiction where such Designated Subsidiary has employees; provided that if such special rules are inconsistent with the requirements of Section 423(b) of the Code, the employees subject to such special rules or sub-plans will participate in the Non-423 Component. Any special rules or sub-plans established pursuant to this Section 13 shall, to the extent possible, result in the employees subject to such rules having substantially the same rights as other Participants in the Plan.

14. Optionees Not Stockholders. Neither the granting of an Option to a Participant nor the deductions from his or her pay shall constitute such Participant a holder of the shares of Common Stock covered by an Option under the Plan until such shares have been purchased by and issued to the Participant.

15. Rights Not Transferable. Rights under the Plan are not transferable by a Participant other than by will or the laws of descent and distribution, and are exercisable during the Participant's lifetime only by the Participant.

16. Application of Funds. All funds received or held by the Company under the Plan may be combined with other corporate funds and may be used for any corporate purpose.

17. Adjustment in Case of Changes Affecting Common Stock. In the event of a subdivision of outstanding shares of Common Stock, the payment of a dividend in Common Stock or any other change affecting the Common Stock, the number of shares approved for the Plan and any other share limitations in the Plan shall be equitably or proportionately adjusted to give proper effect to such event. In the case of and subject to the consummation of a Sale Event, the Administrator, in its discretion, and on such terms and conditions as it deems appropriate, is hereby authorized to take any one or more of the following actions whenever the Administrator determines that such action is appropriate in order to prevent the dilution or enlargement of the benefits or potential benefits intended to be made available under the Plan or with respect to any right under the Plan or to facilitate such transactions or events:

(a) To provide for either (i) termination of any outstanding Option in exchange for an amount of cash, if any, equal to the amount that would have been obtained upon the exercise of such Option had such Option been currently exercisable or (ii) the replacement of such outstanding Option with other options or property selected by the Administrator in its sole discretion.

(b) To provide that the outstanding Options under the Plan shall be assumed by the successor or survivor corporation, or a parent or subsidiary thereof, or shall be substituted for similar options covering the stock of the successor or survivor corporation, or a parent or subsidiary thereof, with appropriate adjustments as to the number and kind of shares and prices.

(c) To make adjustments in the number and type of shares of Common Stock (or other securities or property) subject to outstanding Options under the Plan and/or in the terms and conditions of outstanding Options and Options that may be granted in the future.

(d) To provide that the Offering with respect to which an Option relates will be shortened by setting a New Exercise Date on which such Offering will end. The New Exercise Date will occur before the date of the Sale Event. The Administrator will notify each Participant in writing or electronically prior to the New Exercise Date, that the Exercise Date for the Participant's Option has been changed to the New Exercise Date and that the Participant's Option will be exercised automatically on the New Exercise Date, unless the Participant has withdrawn from the Offering prior to such date as provided in Section 7 hereof.

(e) To provide that all outstanding Options shall terminate without being exercised and all amounts in the accounts of Participants shall be promptly refunded.

18. Amendment of the Plan. The Board may at any time and from time to time amend the Plan in any respect, except that without the approval within twelve (12) months of such Board action by the stockholders, no amendment shall be made increasing the number of shares approved for the Plan or making any other change that would require stockholder approval in order for the 423 Component of the Plan, as amended, to qualify as an "employee stock purchase plan" under Section 423(b) of the Code.

19. Insufficient Shares. If the total number of shares of Common Stock that would otherwise be purchased on any Exercise Date plus the number of shares purchased under previous Offerings under the Plan exceeds the maximum number of shares issuable under the Plan, the shares then available shall be apportioned among Participants in proportion to the amount of payroll deductions accumulated on behalf of each Participant that would otherwise be used to purchase Common Stock on such Exercise Date.

20. Termination of the Plan. The Plan may be terminated at any time by the Board. Upon termination of the Plan, all amounts in the accounts of Participants shall be promptly refunded.

21. Governmental Regulations. The Company's obligation to sell and deliver Common Stock under the Plan is subject to obtaining all governmental approvals required in connection with the authorization, issuance, or sale of such stock.

22. Governing Law. This Plan and all Options and actions taken thereunder shall be governed by, and construed in accordance with the General Corporation Law of the State of Delaware as to matters within the scope thereof, and as to all other matters shall be governed by and construed in accordance with the internal laws of the Commonwealth of Massachusetts applied without regard to conflict of law principles.

23. Issuance of Shares. Shares may be issued upon exercise of an Option from authorized but unissued Common Stock, from shares held in the treasury of the Company, or from any other proper source.

24. Tax Withholding. Participation in the Plan is subject to any applicable U.S. and non-U.S. federal, state or local tax withholding requirements on income the Participant realizes in connection with the Plan. Each Participant agrees, by entering the Plan, that the Company or any Subsidiary may, but will not be obligated to, withhold from a Participant's wages, salary or other compensation at any time the amount necessary for the Company or any Subsidiary to meet applicable withholding obligations, including any withholding required to make available to the Company or any Subsidiary any tax deductions or benefits attributable to the sale or disposition of Common Stock by such Participant. In addition, the Company or any Subsidiary may, but will not be obligated to, withhold from the proceeds of the sale of Common Stock or use any other method of withholding that the Company or any Subsidiary deems appropriate to the extent permitted by U.S. Treasury Regulation Section 1.423-2(f) with respect to the 423 Component. The Company will not be required to issue any Common Stock under the Plan until such obligations are satisfied.

25. Notification Upon Sale of Shares Under the 423 Component. Each Participant agrees, by entering the 423 Component of the Plan, to give the Company prompt notice of any disposition of shares purchased under the Plan where such disposition occurs within two (2) years after the date of grant of the Option pursuant to which such shares were purchased or within one (1) year after the date such shares were purchased.

26. Effective Date. This Plan shall become effective immediately preceding the Registration Date, subject to prior approval by the holders of a majority of the votes cast at a meeting of stockholders at which a quorum is present or by written consent of the stockholders.

27. No Right to Continued Service. Neither the Plan nor any compensation paid hereunder will confer on any Participant the right to continue as an employee or in any other capacity.

DATE APPROVED BY BOARD OF DIRECTORS: November 16, 2021

DATE APPROVED BY STOCKHOLDERS: December 3, 2021

APPENDIX A

Designated Subsidiaries

None.

VIGIL NEUROSCIENCE, INC.

FORM OF DIRECTOR INDEMNIFICATION AGREEMENT

This Indemnification Agreement ("Agreement") is made as of [] by and between Vigil Neuroscience, Inc., a Delaware corporation (the "Company"), and [Director] ("Indemnitee").

RECITALS

WHEREAS, the Company desires to attract and retain the services of highly qualified individuals, such as Indemnitee, to serve the Company;

WHEREAS, in order to induce Indemnitee to provide or continue to provide services to the Company, the Company wishes to provide for the indemnification of, and advancement of expenses to, Indemnitee to the maximum extent permitted by law;

WHEREAS, the Amended and Restated Bylaws (as amended and in effect from time to time, the "Bylaws") of the Company require indemnification of the officers and directors of the Company, and Indemnitee may also be entitled to indemnification pursuant to the General Corporation Law of the State of Delaware (the "DGCL");

WHEREAS, the Bylaws and the DGCL expressly provide that the indemnification provisions set forth therein are not exclusive, and thereby contemplate that contracts may be entered into between the Company and members of the board of directors, officers and other persons with respect to indemnification;

WHEREAS, the Board of Directors of the Company (the "Board") has determined that the increased difficulty in attracting and retaining highly qualified persons such as Indemnitee is detrimental to the best interests of the Company's stockholders;

WHEREAS, it is reasonable and prudent for the Company contractually to obligate itself to indemnify, and to advance expenses on behalf of, such persons to the fullest extent permitted by applicable law, regardless of any amendment or revocation of the Bylaws, so that they will serve or continue to serve the Company free from undue concern that they will not be so indemnified;

WHEREAS, this Agreement is a supplement to and in furtherance of the indemnification provided in the Bylaws and any resolutions adopted pursuant thereto, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder; and

[WHEREAS, Indemnitee has certain rights to indemnification and/or insurance provided by [Name of Fund/Sponsor] which Indemnitee and [Name of Fund/Sponsor] intend to be secondary to the primary obligation of the Company to indemnify Indemnitee as provided in this Agreement, with the Company's acknowledgment and agreement to the foregoing being a material condition to Indemnitee's willingness to serve or continue to serve on the Board.]¹

¹ This recital should be included if the director is affiliated with a fund or other entity that provides indemnification to the director that is intended to backstop the indemnification provided by the Company.

NOW, THEREFORE, in consideration of the premises and the covenants contained herein, the Company and Indemnitee do hereby covenant and agree as follows:

Section 1. Services to the Company. Indemnitee agrees to [continue to] serve as a director of the Company. Indemnitee may at any time and for any reason resign from such position (subject to any other contractual obligation or any obligation imposed by law), in which event the Company shall have no obligation under this Agreement to continue Indemnitee in such position. This Agreement shall not be deemed an employment contract between the Company (or any of its subsidiaries or any Enterprise) and Indemnitee.

Section 2. Definitions.

As used in this Agreement:

(a) "Affiliate" and "Associate" shall have the respective meanings ascribed to such terms in Rule 12b-2 of the General Rules and Regulations under the Securities Exchange Act of 1934, as amended, as in effect on the date of this Agreement; provided, however, that no Person who is a director or officer of the Company shall be deemed an Affiliate or an Associate of any other director or officer of the Company solely as a result of his or her position as director or officer of the Company.

(b) A Person shall be deemed the "Beneficial Owner" of, and shall be deemed to "Beneficially Own" and have "Beneficial Ownership" of, any securities:

(i) which such Person or any of such Person's Affiliates or Associates, directly or indirectly, Beneficially Owns (as determined pursuant to Rule 13d-3 of the Rules under the Exchange Act, as in effect on the date of this Agreement);

(ii) which such Person or any of such Person's Affiliates or Associates, directly or indirectly, has: (A) the legal, equitable or contractual right or obligation to acquire (whether directly or indirectly and whether exercisable immediately or only after the passage of time, compliance with regulatory requirements, satisfaction of one or more conditions (whether or not within the control of such Person) or otherwise) upon the exercise of any conversion rights, exchange rights, rights, warrants or options, or otherwise; (B) the right to vote pursuant to any agreement, arrangement or understanding (whether or not in writing); or (C) the right to dispose of pursuant to any agreement, arrangement or understanding (whether or not in writing) (other than customary arrangements with and between underwriters and selling group members with respect to a *bona fide* public offering of securities);

(iii) which are Beneficially Owned, directly or indirectly, by any other Person (or any Affiliate or Associate thereof) with which such Person or any of such Person's Affiliates or Associates has any agreement, arrangement or understanding (whether or not in writing) (other than customary agreements with and between underwriters and selling group members with respect to a *bona fide* public offering of securities) for the purpose of acquiring, holding, voting or disposing of any securities of the Company; or

(iv) that are the subject of a derivative transaction entered into by such Person or any of such Person's Affiliates or Associates, including, for these purposes, any derivative security acquired by such Person or any of such Person's Affiliates or Associates that gives such Person or any of such Person's Affiliates or Associates the economic equivalent of ownership of an amount of securities due to the fact that the value of the derivative security is explicitly determined by reference to the price or value of such securities, or that provides such Person or any of such Person's Affiliates or Associates an opportunity, directly or indirectly, to profit or to share in any profit derived from any change in the value of such securities, in any case without regard to whether (A) such derivative security conveys any voting rights in such securities to such Person or any of such Person's Affiliates or Associates; (B) the derivative security is required to be, or capable of being, settled through delivery of such securities; or (C) such Person or any of such Person's Affiliates or Associates may have entered into other transactions that hedge the economic effect of such derivative security.

Notwithstanding the foregoing, no Person engaged in business as an underwriter of securities shall be deemed the Beneficial Owner of any securities acquired through such Person's participation as an underwriter in good faith in a firm commitment underwriting.

(c) A "Change in Control" shall be deemed to occur upon the earliest to occur after the date of this Agreement of any of the following events:

(i) Acquisition of Stock by Third Party. Any Person is or becomes the Beneficial Owner (as defined above), directly or indirectly, of securities of the Company representing fifty percent (50%) or more of the combined voting power of the Company's then outstanding securities unless the change in relative Beneficial Ownership of the Company's securities by any Person results solely from a reduction in the aggregate number of outstanding shares of securities entitled to vote generally in the election of directors, provided that a Change in Control shall be deemed to have occurred if subsequent to such reduction such Person becomes the Beneficial Owner, directly or indirectly, of any additional securities of the Company conferring upon such Person any additional voting power;

(ii) Change in Board of Directors. During any period of two (2) consecutive years (not including any period prior to the execution of this Agreement), individuals who at the beginning of such period constitute the Board, and any new director (other than a director designated by a Person who has entered into an agreement with the Company to effect a transaction described in Sections 2(c)(i), 2(c)(iii) or 2(c)(iv)) whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the beginning of the period or whose election or nomination for election was previously so approved, cease for any reason to constitute at least a majority of the members of the Board;

(iii) Corporate Transactions. The effective date of a merger or consolidation of the Company with any other entity, other than a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior to such merger or consolidation continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving or successor entity) more than 50% of the combined voting power of the voting securities of the surviving or successor entity outstanding immediately after such merger or consolidation and with the power to elect at least a majority of the board of directors or other governing body of such surviving or successor entity;

(iv) Liquidation. The approval by the stockholders of the Company of a complete liquidation of the Company or an agreement for the sale, lease, exchange or other transfer by the Company, in one or a series of related transactions, of all or substantially all of the Company's assets; and

(v) Other Events. There occurs any other event of a nature that would be required to be reported in response to Item 6(e) of Schedule 14A of Regulation 14A (or a response to any similar item on any similar schedule or form) promulgated under the Securities Exchange Act of 1934, as amended, whether or not the Company is then subject to such reporting requirement.

(d) "Corporate Status" describes the status of a person as a current or former director of the Company or current or former director, manager, partner, officer, employee, agent or trustee of any other Enterprise which such person is or was serving at the request of the Company.

(e) "Enforcement Expenses" shall include all reasonable attorneys' fees, court costs, transcript costs, fees of experts, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees, and all other out-of-pocket disbursements or expenses of the types customarily incurred in connection with an action to enforce indemnification or advancement rights, or an appeal from such action. Expenses, however, shall not include fees, salaries, wages or benefits owed to Indemnitee.

(f) "Enterprise" shall mean any corporation (other than the Company), partnership, joint venture, trust, employee benefit plan, limited liability company, or other legal entity of which Indemnitee is or was serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee.

(g) "Expenses" shall include all reasonable attorneys' fees, court costs, transcript costs, fees of experts, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees, and all other out-of-pocket disbursements or expenses of the types customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, being or preparing to be a witness in, or otherwise participating in, a Proceeding or an appeal resulting from a Proceeding. Expenses, however, shall not include amounts paid in settlement by Indemnitee, the amount of judgments or fines against Indemnitee or fees, salaries, wages or benefits owed to Indemnitee.

(h) “Independent Counsel” means a law firm, or a partner (or, if applicable, member or shareholder) of such a law firm, that is experienced in matters of Delaware corporation law and neither presently is, nor in the past five (5) years has been, retained to represent: (i) the Company, any subsidiary of the Company, any Enterprise or Indemnitee in any matter material to any such party; or (ii) any other party to the Proceeding giving rise to a claim for indemnification hereunder. Notwithstanding the foregoing, the term “Independent Counsel” shall not include any Person who, under the applicable standards of professional conduct then prevailing, would have a conflict of interest in representing either the Company or Indemnitee in an action to determine Indemnitee’s rights under this Agreement. The Company agrees to pay the reasonable fees and expenses of the Independent Counsel referred to above and to fully indemnify such counsel against any and all expenses, claims, liabilities and damages arising out of or relating to this Agreement or its engagement pursuant hereto.

(i) “Person” shall mean (i) an individual, a corporation, a partnership, a limited liability company, an association, a joint stock company, a trust, a business trust, a government or political subdivision, any unincorporated organization, or any other association or entity including any successor (by merger or otherwise) thereof or thereto, and (ii) a “group” as that term is used for purposes of Section 13(d)(3) of the Securities Exchange Act of 1934, as amended.

(j) The term “Proceeding” shall include any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, investigation, inquiry, administrative hearing or any other actual, threatened or completed proceeding, whether brought in the right of the Company or otherwise and whether of a civil, criminal, administrative, regulatory or investigative nature, and whether formal or informal, in which Indemnitee was, is or will be involved as a party or otherwise by reason of the fact that Indemnitee is or was a director of the Company or is or was serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee of any Enterprise or by reason of any action taken by Indemnitee or of any action taken on his or her part while acting as a director of the Company or while serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee of any Enterprise, in each case whether or not serving in such capacity at the time any liability or expense is incurred for which indemnification, reimbursement or advancement of expenses can be provided under this Agreement; provided, however, that the term “Proceeding” shall not include any action, suit or arbitration, or part thereof, initiated by Indemnitee to enforce Indemnitee’s rights under this Agreement as provided for in Section 12(a) of this Agreement.

Section 3. Indemnity in Third-Party Proceedings. The Company shall indemnify Indemnitee to the extent set forth in this Section 3 if Indemnitee is, or is threatened to be made, a party to or a participant in any Proceeding, other than a Proceeding by or in the right of the Company to procure a judgment in its favor. Pursuant to this Section 3, Indemnitee shall be indemnified against all Expenses, judgments, fines, penalties, excise taxes, and amounts paid in settlement actually and reasonably incurred by Indemnitee or on his or her behalf in connection with such Proceeding or any claim, issue or matter therein, if Indemnitee acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the Company and, in the case of a criminal proceeding, had no reasonable cause to believe that his or her conduct was unlawful.

Section 4. Indemnity in Proceedings by or in the Right of the Company. The Company shall indemnify Indemnitee to the extent set forth in this Section 4 if Indemnitee is, or is threatened to be made, a party to or a participant in any Proceeding by or in the right of the Company to procure a judgment in its favor. Pursuant to this Section 4, Indemnitee shall be indemnified against all Expenses actually and reasonably incurred by Indemnitee or on his or her behalf in connection with such Proceeding or any claim, issue or matter therein, if Indemnitee acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the Company. No indemnification for Expenses shall be made under this Section 4 in respect of any claim, issue or matter as to which Indemnitee shall have been finally adjudged by a court to be liable to the Company, unless and only to the extent that the Delaware Court of Chancery (the "Delaware Court") shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, Indemnitee is fairly and reasonably entitled to indemnification for such expenses as the Delaware Court shall deem proper.

Section 5. Indemnification for Expenses of a Party Who is Wholly or Partly Successful. Notwithstanding any other provisions of this Agreement and except as provided in Section 7, to the extent that Indemnitee is a party to or a participant in any Proceeding and is successful in such Proceeding or in defense of any claim, issue or matter therein, the Company shall indemnify Indemnitee against all Expenses actually and reasonably incurred by him or her in connection therewith. If Indemnitee is not wholly successful in such Proceeding but is successful as to one or more but less than all claims, issues or matters in such Proceeding, the Company shall indemnify Indemnitee against all Expenses actually and reasonably incurred by Indemnitee or on his or her behalf in connection with each successfully resolved claim, issue or matter. For purposes of this Section and without limitation, the termination of any claim, issue or matter in such a Proceeding by dismissal, with or without prejudice, shall be deemed to be a successful result as to such claim, issue or matter.

Section 6. Reimbursement for Expenses of a Witness or in Response to a Subpoena. Notwithstanding any other provision of this Agreement, to the extent that Indemnitee, by reason of his or her Corporate Status, (i) is a witness in any Proceeding to which Indemnitee is not a party and is not threatened to be made a party or (ii) receives a subpoena with respect to any Proceeding to which Indemnitee is not a party and is not threatened to be made a party, the Company shall reimburse Indemnitee for all Expenses actually and reasonably incurred by him or her or on his or her behalf in connection therewith.

Section 7. Exclusions. Notwithstanding any provision in this Agreement to the contrary, the Company shall not be obligated under this Agreement:

(a) to indemnify for amounts otherwise indemnifiable hereunder (or for which advancement is provided hereunder) if and to the extent that Indemnitee has otherwise actually received such amounts under any insurance policy, contract, agreement or otherwise; provided that the foregoing shall not [i] apply to any personal or umbrella liability insurance maintained by Indemnitee, [or, (ii) affect the rights of Indemnitee or the Fund Indemnitors (as defined below) as set forth in Section 13(c)];

(b) to indemnify for an accounting of profits made from the purchase and sale (or sale and purchase) by Indemnitee of securities of the Company within the meaning of Section 16(b) of the Securities Exchange Act of 1934, as amended, or similar provisions of state statutory law or common law, or from the purchase or sale by Indemnitee of such securities in violation of Section 306 of the Sarbanes-Oxley Act of 2002;

(c) to indemnify with respect to any Proceeding, or part thereof, brought by Indemnitee against the Company, any legal entity which it controls, any director or officer thereof or any third party, unless (i) the Board has consented to the initiation of such Proceeding or part thereof and (ii) the Company provides the indemnification, in its sole discretion, pursuant to the powers vested in the Company under applicable law; provided, however, that this Section 7(d) shall not apply to (A) counterclaims or affirmative defenses asserted by Indemnitee in an action brought against Indemnitee or (B) any action brought by Indemnitee for indemnification or advancement from the Company under this Agreement or under any directors' and officers' liability insurance policies maintained by the Company in the suit for which indemnification or advancement is being sought as described in Section 12; or

(d) to provide any indemnification or advancement of expenses that is prohibited by applicable law (as such law exists at the time payment would otherwise be required pursuant to this Agreement).

Section 8. Advancement of Expenses. Subject to Section 9(b), the Company shall advance, to the extent not prohibited by law, the Expenses incurred by Indemnitee in connection with any Proceeding, and such advancement shall be made as incurred, and such advancement shall be made within thirty (30) days after the receipt by the Company of a statement or statements requesting such advances (including any invoices received by Indemnitee, which such invoices may be redacted as necessary to avoid the waiver of any privilege accorded by applicable law) from time to time, whether prior to or after final disposition of any Proceeding. Advances shall be unsecured and interest free. Advances shall be made without regard to Indemnitee's (i) ability to repay the expenses, (ii) ultimate entitlement to indemnification under the other provisions of this Agreement, and (iii) entitlement to and availability of insurance coverage, including advancement, payment or reimbursement of defense costs, expenses or covered loss under the provisions of any applicable insurance policy (including, without limitation, whether such advancement, payment or reimbursement is withheld, conditioned or delayed by the insurer(s)). Indemnitee shall qualify for advances upon the execution and delivery to the Company of this Agreement which shall constitute an undertaking providing that Indemnitee undertakes to the fullest extent required by law to repay the advance if and to the extent that it is ultimately determined by a court of competent jurisdiction in a final judgment, not subject to appeal, that Indemnitee is not entitled to be indemnified by the Company. No other form of undertaking shall be required. The right to advances under this paragraph shall in all events continue until final disposition of any Proceeding, including any appeal therein. Nothing in this Section 8 shall limit Indemnitee's right to advancement pursuant to Section 12(e) of this Agreement.

Section 9. Procedure for Notification and Defense of Claim.

(a) To obtain indemnification under this Agreement, Indemnatee shall submit to the Company a written request therefor specifying the basis for the claim, the amounts for which Indemnatee is seeking payment under this Agreement, and all documentation related thereto as reasonably requested by the Company.

(b) In the event that the Company shall be obligated hereunder to provide indemnification for or make any advancement of Expenses with respect to any Proceeding, the Company shall be entitled to assume the defense of such Proceeding, or any claim, issue or matter therein, with counsel approved by Indemnatee (which approval shall not be unreasonably withheld or delayed) upon the delivery to Indemnatee of written notice of the Company's election to do so. After delivery of such notice, approval of such counsel by Indemnatee and the retention of such counsel by the Company, the Company will not be liable to Indemnatee under this Agreement for any fees or expenses of separate counsel subsequently employed by or on behalf of Indemnatee with respect to the same Proceeding; provided that (i) Indemnatee shall have the right to employ separate counsel in any such Proceeding at Indemnatee's expense and (ii) if (A) the employment of separate counsel by Indemnatee has been previously authorized by the Company, (B) Indemnatee shall have reasonably concluded that there may be a conflict of interest between the Company and Indemnatee in the conduct of such defense, (C) the Company shall not continue to retain such counsel to defend such Proceeding, or (D) a Change in Control shall have occurred, then the fees and expenses actually and reasonably incurred by Indemnatee with respect to his or her separate counsel shall be Expenses hereunder.

(c) In the event that the Company does not assume the defense in a Proceeding pursuant to paragraph (b) above, then the Company will be entitled to participate in the Proceeding at its own expense.

(d) The Company shall not be liable to indemnify Indemnatee under this Agreement for any amounts paid in settlement of any Proceeding effected without its prior written consent (which consent shall not be unreasonably withheld or delayed). Without limiting the generality of the foregoing, the fact that an insurer under an applicable insurance policy delays or is unwilling to consent to such settlement or is or may be in breach of its obligations under such policy, or the fact that directors' and officers' liability insurance is otherwise unavailable or not maintained by the Company, may not be taken into account by the Company in determining whether to provide its consent. The Company shall not, without the prior written consent of Indemnatee (which consent shall not be unreasonably withheld or delayed), enter into any settlement which (i) includes an admission of fault of Indemnatee, any non-monetary remedy imposed on Indemnatee or any monetary damages for which Indemnatee is not wholly and actually indemnified hereunder or (ii) with respect to any Proceeding with respect to which Indemnatee may be or is made a party or may be otherwise entitled to seek indemnification hereunder, does not include the full release of Indemnatee from all liability in respect of such Proceeding.

Section 10. Procedure Upon Application for Indemnification.

(a) Upon written request by Indemnatee for indemnification pursuant to Section 9(a), a determination, if such determination is required by applicable law, with respect to Indemnatee's entitlement to indemnification hereunder shall be made in the specific case by one

of the following methods: (x) if a Change in Control shall have occurred, by Independent Counsel in a written opinion to the Board; or (y) if a Change in Control shall not have occurred: (i) by a majority vote of the disinterested directors, even though less than a quorum; (ii) by a committee of disinterested directors designated by a majority vote of the disinterested directors, even though less than a quorum; or (iii) if there are no disinterested directors or if the disinterested directors so direct, by Independent Counsel in a written opinion to the Board. For purposes hereof, disinterested directors are those members of the Board who are not parties to the action, suit or proceeding in respect of which indemnification is sought. In the case that such determination is made by Independent Counsel, a copy of Independent Counsel's written opinion shall be delivered to Indemnitee and, if it is so determined that Indemnitee is entitled to indemnification, payment to Indemnitee shall be made within thirty (30) days after such determination. Indemnitee shall cooperate with the Independent Counsel or the Company, as applicable, in making such determination with respect to Indemnitee's entitlement to indemnification, including providing to such counsel or the Company, upon reasonable advance request, any documentation or information which is not privileged or otherwise protected from disclosure and which is reasonably available to Indemnitee and reasonably necessary to such determination. The Company shall likewise cooperate with Indemnitee and Independent Counsel, if applicable, in making such determination with respect to Indemnitee's entitlement to indemnification, including providing to such counsel and Indemnitee, upon reasonable advance request, any documentation or information which is not privileged or otherwise protected from disclosure and which is reasonably available to the Company and reasonably necessary to such determination. Any out-of-pocket costs or expenses (including reasonable attorneys' fees and disbursements) actually and reasonably incurred by Indemnitee in so cooperating with the Independent Counsel or the Company shall be borne by the Company (irrespective of the determination as to Indemnitee's entitlement to indemnification) and the Company hereby indemnifies and agrees to hold Indemnitee harmless therefrom.

(b) If the determination of entitlement to indemnification is to be made by Independent Counsel pursuant to Section 10(a), the Independent Counsel shall be selected by the Board if a Change in Control shall not have occurred or, if a Change in Control shall have occurred, by Indemnitee. Indemnitee or the Company, as the case may be, may, within ten (10) days after written notice of such selection, deliver to the Company or Indemnitee, as the case may be, a written objection to such selection; provided, however, that such objection may be asserted only on the ground that the Independent Counsel so selected does not meet the requirements of "Independent Counsel" as defined in Section 2 of this Agreement, and the objection shall set forth with particularity the factual basis of such assertion. Absent a proper and timely objection, the Person so selected shall act as Independent Counsel. If such written objection is so made and substantiated, the Independent Counsel so selected may not serve as Independent Counsel unless and until such objection is withdrawn or the Delaware Court has determined that such objection is without merit. If, within twenty (20) days after the later of (i) submission by Indemnitee of a written request for indemnification pursuant to Section 9(a), and (ii) the final disposition of the Proceeding, including any appeal therein, no Independent Counsel shall have been selected without objection, either Indemnitee or the Company may petition the Delaware Court for resolution of any objection which shall have been made by Indemnitee or the Company to the selection of Independent Counsel and/or for the appointment as Independent Counsel of a Person selected by the court or by such other Person as the court shall designate. The Person with respect to whom all objections are so resolved or the Person so appointed shall

act as Independent Counsel under Section 10(a) hereof. Upon the due commencement of any judicial proceeding or arbitration pursuant to Section 12(a) of this Agreement, Independent Counsel shall be discharged and relieved of any further responsibility in such capacity (subject to the applicable standards of professional conduct then prevailing).

(c) Notwithstanding anything to the contrary contained in this Agreement, the determination of entitlement to indemnification under this Agreement shall be made without regard to the Indemnitee's entitlement to and availability of insurance coverage, including advancement, payment or reimbursement of defense costs, expenses or covered loss under the provisions of any applicable insurance policy (including, without limitation, whether such advancement, payment or reimbursement is withheld, conditioned or delayed by the insurer(s)).

Section 11. Presumptions and Effect of Certain Proceedings.

(a) To the extent permitted by applicable law, in making a determination with respect to entitlement to indemnification hereunder, it shall be presumed that Indemnitee is entitled to indemnification under this Agreement if Indemnitee has submitted a request for indemnification in accordance with Section 9(a) of this Agreement, and the Company shall have the burden of proof and the burden of persuasion by clear and convincing evidence to overcome that presumption in connection with the making of any determination contrary to that presumption.

(b) The termination of any Proceeding or of any claim, issue or matter therein, by judgment, order, settlement or conviction, or upon a plea of guilty, nolo contendere or its equivalent, shall not (except as otherwise expressly provided in this Agreement) of itself adversely affect the right of Indemnitee to indemnification or create a presumption that Indemnitee did not act in good faith and in a manner which he or she reasonably believed to be in or not opposed to the best interests of the Company or, with respect to any criminal Proceeding, that Indemnitee had reasonable cause to believe that his or her conduct was unlawful.

(c) Indemnitee shall be deemed to have acted in good faith if Indemnitee's actions based on the records or books of account of the Company or any other Enterprise, including financial statements, or on information supplied to Indemnitee by the directors, officers, agents or employees of the Company or any other Enterprise in the course of their duties, or on the advice of legal counsel for the Company or any other Enterprise or on information or records given or reports made to the Company or any other Enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the Company or any other Enterprise. The provisions of this Section 11(c) shall not be deemed to be exclusive or to limit in any way the other circumstances in which Indemnitee may be deemed to have met the applicable standard of conduct set forth in this Agreement. In addition, the knowledge and/or actions, or failure to act, of any director, manager, partner, officer, employee, agent or trustee of the Company, any subsidiary of the Company, or any Enterprise shall not be imputed to Indemnitee for purposes of determining the right to indemnification under this Agreement. Whether or not the foregoing provisions of this Section 11(c) are satisfied, it shall in any event be presumed that Indemnitee has at all times acted in good faith and in a manner Indemnitee reasonably believed to be in or not opposed to the best interests of the Company. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence.

Section 12. Remedies of Indemnitee.

(a) Subject to Section 12(f), in the event that (i) a determination is made pursuant to Section 10 of this Agreement that Indemnitee is not entitled to indemnification under this Agreement, (ii) advancement of Expenses is not timely made pursuant to Section 8 of this Agreement, (iii) no determination of entitlement to indemnification shall have been made pursuant to Section 10(a) of this Agreement within sixty (60) days after receipt by the Company of the request for indemnification for which a determination is to be made other than by Independent Counsel, (iv) payment of indemnification or reimbursement of expenses is not made pursuant to Section 5 or 6 or the last sentence of Section 10(a) of this Agreement within thirty (30) days after receipt by the Company of a written request therefor (including any invoices received by Indemnitee, which such invoices may be redacted as necessary to avoid the waiver of any privilege accorded by applicable law) or (v) payment of indemnification pursuant to Section 3 or 4 of this Agreement is not made within thirty (30) days after a determination has been made that Indemnitee is entitled to indemnification, Indemnitee shall be entitled to an adjudication by the Delaware Court of his or her entitlement to such indemnification or advancement. Alternatively, Indemnitee, at his or her option, may seek an award in arbitration to be conducted by a single arbitrator pursuant to the Commercial Arbitration Rules of the American Arbitration Association. Indemnitee shall commence such proceeding seeking an adjudication or an award in arbitration within 180 days following the date on which Indemnitee first has the right to commence such proceeding pursuant to this Section 12(a); provided, however, that the foregoing time limitation shall not apply in respect of a proceeding brought by Indemnitee to enforce his or her rights under Section 5 of this Agreement. The Company shall not oppose Indemnitee's right to seek any such adjudication or award in arbitration.

(b) In the event that a determination shall have been made pursuant to Section 10(a) of this Agreement that Indemnitee is not entitled to indemnification, any judicial proceeding or arbitration commenced pursuant to this Section 12 shall be conducted in all respects as a de novo trial, or arbitration, on the merits and Indemnitee shall not be prejudiced by reason of that adverse determination. In any judicial proceeding or arbitration commenced pursuant to this Section 12, the Company shall have the burden of proving Indemnitee is not entitled to indemnification or advancement, as the case may be.

(c) If a determination shall have been made pursuant to Section 10(a) of this Agreement that Indemnitee is entitled to indemnification, the Company shall be bound by such determination in any judicial proceeding or arbitration commenced pursuant to this Section 12, absent (i) a misstatement by Indemnitee of a material fact, or an omission of a material fact necessary to make Indemnitee's statement not materially misleading, in connection with the request for indemnification, or (ii) a prohibition of such indemnification under applicable law.

(d) The Company shall be precluded from asserting in any judicial proceeding or arbitration commenced pursuant to this Section 12 that the procedures and presumptions of this Agreement are not valid, binding and enforceable and shall stipulate in any such court or before any such arbitrator that the Company is bound by all the provisions of this Agreement.

(e) The Company shall indemnify Indemnitee to the fullest extent permitted by law against any and all Enforcement Expenses and, if requested by Indemnitee, shall (within thirty (30) days after receipt by the Company of a written request therefor) advance, to the extent not prohibited by law, such Enforcement Expenses to Indemnitee, which are incurred by Indemnitee in connection with any action brought by Indemnitee for indemnification or advancement from the Company under this Agreement or under any directors' and officers' liability insurance policies maintained by the Company in the suit for which indemnification or advancement is being sought. Such written request for advancement shall include invoices received by Indemnitee in connection with such Enforcement Expenses but, in the case of invoices in connection with legal services, any references to legal work performed or to expenditures made that would cause Indemnitee to waive any privilege accorded by applicable law need not be included with the invoice.

(f) Notwithstanding anything in this Agreement to the contrary, no determination as to entitlement to indemnification under this Agreement shall be required to be made prior to the final disposition of the Proceeding, including any appeal therein.

Section 13. Non-exclusivity; Survival of Rights; Insurance; Primacy of Indemnification; Subrogation.

(a) The rights of indemnification and to receive advancement as provided by this Agreement shall not be deemed exclusive of any other rights to which Indemnitee may at any time be entitled under applicable law, the Bylaws, any agreement, a vote of stockholders or a resolution of directors, or otherwise. No amendment, alteration or repeal of this Agreement or of any provision hereof shall limit or restrict any right of Indemnitee under this Agreement in respect of any action taken or omitted by such Indemnitee in his or her Corporate Status prior to such amendment, alteration or repeal. To the extent that a change in Delaware law, whether by statute or judicial decision, permits greater indemnification or advancement than would be afforded currently under the Bylaws and this Agreement, it is the intent of the parties hereto that Indemnitee shall enjoy by this Agreement the greater benefits so afforded by such change. No right or remedy herein conferred is intended to be exclusive of any other right or remedy, and every other right and remedy shall be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other right or remedy.

(b) To the extent that the Company maintains an insurance policy or policies providing liability insurance for directors, managers, partners, officers, employees, agents or trustees of the Company or of any other Enterprise, Indemnitee shall be covered by such policy or policies in accordance with its or their terms to the maximum extent of the coverage available for any such director, manager, partner, officer, employee, agent or trustee under such policy or policies. If, at the time of the receipt of a notice of a claim pursuant to the terms hereof, the Company has director and officer liability insurance in effect, the Company shall give prompt notice of such claim to the insurers in accordance with the procedures set forth in the respective policies. The Company shall thereafter take all necessary or desirable action to cause such insurers to pay, on behalf of the Indemnitee, all amounts payable as a result of such Proceeding in accordance with the terms of such policies. Upon request of Indemnitee, the Company shall

also promptly provide to Indemnitee: (i) copies of all of the Company's potentially applicable directors' and officers' liability insurance policies, (ii) copies of such notices delivered to the applicable insurers, and (iii) copies of all subsequent communications and correspondence between the Company and such insurers regarding the Proceeding.

(c) [The Company hereby acknowledges that Indemnitee has certain rights to indemnification, advancement of expenses and/or insurance provided by [Name of Fund/Sponsor] and certain of [its][their] affiliates (collectively, the "Fund Indemnitors"). The Company hereby agrees (i) that it is the indemnitor of first resort (*i.e.*, its obligations to Indemnitee are primary and any obligation of the Fund Indemnitors to advance expenses or to provide indemnification for the same expenses or liabilities incurred by Indemnitee are secondary), (ii) that it shall be required to advance the full amount of expenses incurred by Indemnitee and shall be liable for the full amount of all Expenses, judgments, penalties, fines and amounts paid in settlement to the extent legally permitted and as required by the terms of this Agreement and the Bylaws (or any other agreement between the Company and Indemnitee), without regard to any rights Indemnitee may have against the Fund Indemnitors, and (iii) that it irrevocably waives, relinquishes and releases the Fund Indemnitors from any and all claims against the Fund Indemnitors for contribution, subrogation or any other recovery of any kind in respect thereof. The Company further agrees that no advancement or payment by the Fund Indemnitors on behalf of Indemnitee with respect to any claim for which Indemnitee has sought indemnification from the Company shall affect the foregoing and the Fund Indemnitors shall have a right of contribution and/or be subrogated to the extent of such advancement or payment to all of the rights of recovery of Indemnitee against the Company. The Company and Indemnitee agree that the Fund Indemnitors are express third party beneficiaries of the terms of this Section 13(c).]

(d) [Except as provided in paragraph (c) above,] [I/i]n the event of any payment under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of recovery of Indemnitee [(other than against the Fund Indemnitors)], who shall execute all papers required and take all action necessary to secure such rights, including execution of such documents as are necessary to enable the Company to bring suit to enforce such rights.

(e) [Except as provided in paragraph (c) above,] [T/t]he Company's obligation to provide indemnification or advancement hereunder to Indemnitee who is or was serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee of any other Enterprise shall be reduced by any amount Indemnitee has actually received as indemnification or advancement from such other Enterprise.

Section 14. Duration of Agreement. This Agreement shall continue until and terminate upon the later of: (a) ten (10) years after the date that Indemnitee shall have ceased to serve as a director of the Company or (b) one (1) year after the final termination of any Proceeding, including any appeal, then pending in respect of which Indemnitee is granted rights of indemnification or advancement hereunder and of any proceeding commenced by Indemnitee pursuant to Section 12 of this Agreement relating thereto. This Agreement shall be binding upon the Company and its successors and assigns and shall inure to the benefit of Indemnitee and his or her heirs, executors and administrators. The Company shall require and cause any successor

(whether direct or indirect by purchase, merger, consolidation or otherwise) to all, substantially all or a substantial part, of the business and/or assets of the Company, by written agreement in form and substance satisfactory to Indemnitee, expressly to assume and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform if no such succession had taken place.

Section 15. Severability. If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable for any reason whatsoever: (a) the validity, legality and enforceability of the remaining provisions of this Agreement (including, without limitation, each portion of any section of this Agreement containing any such provision held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall not in any way be affected or impaired thereby and shall remain enforceable to the fullest extent permitted by law; (b) such provision or provisions shall be deemed reformed to the extent necessary to conform to applicable law and to give the maximum effect to the intent of the parties hereto; and (c) to the fullest extent possible, the provisions of this Agreement (including, without limitation, each portion of any section of this Agreement containing any such provision held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall be construed so as to give effect to the intent manifested thereby.

Section 16. Enforcement.

(a) The Company expressly confirms and agrees that it has entered into this Agreement and assumed the obligations imposed on it hereby in order to induce Indemnitee to serve or continue to serve as a director of the Company, and the Company acknowledges that Indemnitee is relying upon this Agreement in serving as a director of the Company.

(b) This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior agreements and understandings, oral, written and implied, between the parties hereto with respect to the subject matter hereof; provided, however, that this Agreement is a supplement to and in furtherance of the Bylaws and applicable law, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder.

Section 17. Modification and Waiver. No supplement, modification or amendment, or waiver of any provision, of this Agreement shall be binding unless executed in writing by the parties thereto. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provisions of this Agreement nor shall any waiver constitute a continuing waiver. No supplement, modification or amendment of this Agreement or of any provision hereof shall limit or restrict any right of Indemnitee under this Agreement in respect of any action taken or omitted by such Indemnitee prior to such supplement, modification or amendment.

Section 18. Notice by Indemnitee. Indemnitee agrees promptly to notify the Company in writing upon being served with any summons, citation, subpoena, complaint, indictment, information or other document relating to any Proceeding or matter which may be subject to indemnification, reimbursement or advancement as provided hereunder. The failure of Indemnitee to so notify the Company or any delay in notification shall not relieve the Company

of any obligation which it may have to Indemnitee under this Agreement or otherwise, unless, and then only to the extent that, the Company did not otherwise learn of the Proceeding and such delay is materially prejudicial to the Company's ability to defend such Proceeding or matter; and, provided, further, that notice will be deemed to have been given without any action on the part of Indemnitee in the event the Company is a party to the same Proceeding.

Section 19. Notices. All notices, requests, demands and other communications under this Agreement shall be in writing and shall be deemed to have been duly given if (i) delivered by hand and receipted for by the party to whom said notice or other communication shall have been directed, (ii) mailed by certified or registered mail with postage prepaid, on the third business day after the date on which it is so mailed, (iii) mailed by reputable overnight courier and receipted for by the party to whom said notice or other communication shall have been directed or (iv) sent by facsimile transmission, with receipt of oral confirmation that such transmission has been received:

(a) If to Indemnitee, at such address as Indemnitee shall provide to the Company.

(b) If to the Company to:

Vigil Neuroscience, Inc.
One Broadway, Suite 07-300
Cambridge, MA 02142
Attention: Chief Executive Officer

or to any other address as may have been furnished to Indemnitee by the Company.

Section 20. Contribution. To the fullest extent permissible under applicable law, if the indemnification provided for in this Agreement is unavailable to Indemnitee for any reason whatsoever, the Company, in lieu of indemnifying Indemnitee, shall contribute to the amount incurred by Indemnitee, whether for judgments, fines, penalties, excise taxes, amounts paid or to be paid in settlement and/or for Expenses, in connection with any Proceeding in such proportion as is deemed fair and reasonable in light of all of the circumstances in order to reflect (i) the relative benefits received by the Company and Indemnitee in connection with the event(s) and/or transaction(s) giving rise to such Proceeding; and/or (ii) the relative fault of the Company (and its directors, officers, employees and agents) and Indemnitee in connection with such event(s) and/or transactions.

Section 21. Internal Revenue Code Section 409A. The Company intends for this Agreement to comply with the Indemnification exception under Section 1.409A-1(b)(10) of the regulations promulgated under the Internal Revenue Code of 1986, as amended (the "Code"), which provides that indemnification of, or the purchase of an insurance policy providing for payments of, all or part of the expenses incurred or damages paid or payable by Indemnitee with respect to a bona fide claim against Indemnitee or the Company do not provide for a deferral of compensation, subject to Section 409A of the Code, where such claim is based on actions or failures to act by Indemnitee in his or her capacity as a service provider of the Company. The parties intend that this Agreement be interpreted and construed with such intent.

Section 22. Applicable Law and Consent to Jurisdiction. This Agreement and the legal relations among the parties shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware, without regard to its conflict of laws rules. Except with respect to any arbitration commenced by Indemnitee pursuant to Section 12(a) of this Agreement, the Company and Indemnitee hereby irrevocably and unconditionally (i) agree that any action or proceeding arising out of or in connection with this Agreement shall be brought only in the Delaware Court, and not in any other state or federal court in the United States of America or any court in any other country, (ii) consent to submit to the exclusive jurisdiction of the Delaware Court for purposes of any action or proceeding arising out of or in connection with this Agreement, (iii) consent to service of process at the address set forth in Section 19 of this Agreement with the same legal force and validity as if served upon such party personally within the State of Delaware, (iv) waive any objection to the laying of venue of any such action or proceeding in the Delaware Court, and (v) waive, and agree not to plead or to make, any claim that any such action or proceeding brought in the Delaware Court has been brought in an improper or inconvenient forum.

Section 23. Headings. The headings of the paragraphs of this Agreement are inserted for convenience only and shall not be deemed to constitute part of this Agreement or to affect the construction thereof.

Section 24. Identical Counterparts. This Agreement may be executed in one or more counterparts, each of which shall for all purposes be deemed to be an original but all of which together shall constitute one and the same Agreement. Only one such counterpart signed by the party against whom enforceability is sought needs to be produced to evidence the existence of this Agreement.

Section 25. Monetary Damages Insufficient/Specific Enforcement. The Company and Indemnitee agree that a monetary remedy for breach of this Agreement may be inadequate, impracticable and difficult of proof, and further agree that such breach may cause Indemnitee irreparable harm. Accordingly, the parties hereto agree that Indemnitee may enforce this Agreement by seeking injunctive relief and/or specific performance hereof, without any necessity of showing actual damage or irreparable harm (having agreed that actual and irreparable harm will result in not forcing the Company to specifically perform its obligations pursuant to this Agreement) and that by seeking injunctive relief and/or specific performance, Indemnitee shall not be precluded from seeking or obtaining any other relief to which he may be entitled. The Company and Indemnitee further agree that Indemnitee shall be entitled to such specific performance and injunctive relief, including temporary restraining orders, preliminary injunctions and permanent injunctions, without the necessity of posting bonds or other undertaking in connection therewith. The Company acknowledges that in the absence of a waiver, a bond or undertaking may be required of Indemnitee by the Court, and the Company hereby waives any such requirement of a bond or undertaking.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties have caused this Agreement to be signed as of the day and year first above written.

VIGIL NEUROSCIENCE, INC.

By: _____

Name:

Title:

[Name of Indemnitee]

VIGIL NEUROSCIENCE, INC.

FORM OF OFFICER INDEMNIFICATION AGREEMENT

This Indemnification Agreement ("Agreement") is made as of [] by and between Vigil Neuroscience, Inc., a Delaware corporation (the "Company"), and [Officer] ("Indemnitee").

RECITALS

WHEREAS, the Company desires to attract and retain the services of highly qualified individuals, such as Indemnitee, to serve the Company;

WHEREAS, in order to induce Indemnitee to provide or continue to provide services to the Company, the Company wishes to provide for the indemnification of, and advancement of expenses to, Indemnitee to the maximum extent permitted by law;

WHEREAS, the Amended and Restated Bylaws (as amended and in effect from time to time, the "Bylaws") of the Company require indemnification of the officers and directors of the Company, and Indemnitee may also be entitled to indemnification pursuant to the General Corporation Law of the State of Delaware (the "DGCL");

WHEREAS, the Bylaws and the DGCL expressly provide that the indemnification provisions set forth therein are not exclusive, and thereby contemplate that contracts may be entered into between the Company and members of the board of directors, officers and other persons with respect to indemnification;

WHEREAS, the Board of Directors of the Company (the "Board") has determined that the increased difficulty in attracting and retaining highly qualified persons such as Indemnitee is detrimental to the best interests of the Company's stockholders;

WHEREAS, it is reasonable and prudent for the Company contractually to obligate itself to indemnify, and to advance expenses on behalf of, such persons to the fullest extent permitted by applicable law, regardless of any amendment or revocation of the Bylaws, so that they will serve or continue to serve the Company free from undue concern that they will not be so indemnified; and

WHEREAS, this Agreement is a supplement to and in furtherance of the indemnification provided in the Bylaws and any resolutions adopted pursuant thereto, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder.

NOW, THEREFORE, in consideration of the premises and the covenants contained herein, the Company and Indemnitee do hereby covenant and agree as follows:

Section 1. Services to the Company. Indemnitee agrees to [continue to] serve as [a director and] an officer of the Company. Indemnitee may at any time and for any reason resign

from [any] such position (subject to any other contractual obligation or any obligation imposed by law), in which event the Company shall have no obligation under this Agreement to continue Indemnitee in such position. This Agreement shall not be deemed an employment contract between the Company (or any of its subsidiaries or any Enterprise) and Indemnitee.

Section 2. Definitions.

As used in this Agreement:

(a) “Affiliate” and “Associate” shall have the respective meanings ascribed to such terms in Rule 12b-2 of the General Rules and Regulations under the Securities Exchange Act of 1934, as amended, as in effect on the date of this Agreement; provided, however, that no Person who is a director or officer of the Company shall be deemed an Affiliate or an Associate of any other director or officer of the Company solely as a result of his or her position as director or officer of the Company.

(b) A Person shall be deemed the “Beneficial Owner” of, and shall be deemed to “Beneficially Own” and have “Beneficial Ownership” of, any securities:

(i) which such Person or any of such Person’s Affiliates or Associates, directly or indirectly, Beneficially Owns (as determined pursuant to Rule 13d-3 of the Rules under the Exchange Act, as in effect on the date of this Agreement);

(ii) which such Person or any of such Person’s Affiliates or Associates, directly or indirectly, has: (A) the legal, equitable or contractual right or obligation to acquire (whether directly or indirectly and whether exercisable immediately or only after the passage of time, compliance with regulatory requirements, satisfaction of one or more conditions (whether or not within the control of such Person) or otherwise) upon the exercise of any conversion rights, exchange rights, rights, warrants or options, or otherwise; (B) the right to vote pursuant to any agreement, arrangement or understanding (whether or not in writing); or (C) the right to dispose of pursuant to any agreement, arrangement or understanding (whether or not in writing) (other than customary arrangements with and between underwriters and selling group members with respect to a bona fide public offering of securities);

(iii) which are Beneficially Owned, directly or indirectly, by any other Person (or any Affiliate or Associate thereof) with which such Person or any of such Person’s Affiliates or Associates has any agreement, arrangement or understanding (whether or not in writing) (other than customary agreements with and between underwriters and selling group members with respect to a bona fide public offering of securities) for the purpose of acquiring, holding, voting or disposing of any securities of the Company; or

(iv) that are the subject of a derivative transaction entered into by such Person or any of such Person’s Affiliates or Associates, including, for these purposes, any derivative security acquired by such Person or any of such Person’s Affiliates or Associates that gives such Person or any of such Person’s Affiliates or Associates the economic equivalent of ownership of an amount of securities due to the fact that the value of the derivative security is explicitly determined by reference to the price or value of such securities, or that provides such Person or

any of such Person's Affiliates or Associates an opportunity, directly or indirectly, to profit or to share in any profit derived from any change in the value of such securities, in any case without regard to whether (A) such derivative security conveys any voting rights in such securities to such Person or any of such Person's Affiliates or Associates; (B) the derivative security is required to be, or capable of being, settled through delivery of such securities; or (C) such Person or any of such Person's Affiliates or Associates may have entered into other transactions that hedge the economic effect of such derivative security.

Notwithstanding the foregoing, no Person engaged in business as an underwriter of securities shall be deemed the Beneficial Owner of any securities acquired through such Person's participation as an underwriter in good faith in a firm commitment underwriting.

(c) A "Change in Control" shall be deemed to occur upon the earliest to occur after the date of this Agreement of any of the following events:

(i) Acquisition of Stock by Third Party. Any Person is or becomes the Beneficial Owner (as defined above), directly or indirectly, of securities of the Company representing fifty percent (50%) or more of the combined voting power of the Company's then outstanding securities unless the change in relative Beneficial Ownership of the Company's securities by any Person results solely from a reduction in the aggregate number of outstanding shares of securities entitled to vote generally in the election of directors, provided that a Change in Control shall be deemed to have occurred if subsequent to such reduction such Person becomes the Beneficial Owner, directly or indirectly, of any additional securities of the Company conferring upon such Person any additional voting power;

(ii) Change in Board of Directors. During any period of two (2) consecutive years (not including any period prior to the execution of this Agreement), individuals who at the beginning of such period constitute the Board, and any new director (other than a director designated by a Person who has entered into an agreement with the Company to effect a transaction described in Sections 2(c)(i), 2(c)(iii) or 2(c)(iv)) whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the beginning of the period or whose election or nomination for election was previously so approved, cease for any reason to constitute at least a majority of the members of the Board;

(iii) Corporate Transactions. The effective date of a merger or consolidation of the Company with any other entity, other than a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior to such merger or consolidation continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving or successor entity) more than 50% of the combined voting power of the voting securities of the surviving or successor entity outstanding immediately after such merger or consolidation and with the power to elect at least a majority of the board of directors or other governing body of such surviving or successor entity;

(iv) Liquidation. The approval by the stockholders of the Company of a complete liquidation of the Company or an agreement for the sale, lease, exchange or other transfer by the Company, in one or a series of related transactions, of all or substantially all of the Company's assets; and

(v) Other Events. There occurs any other event of a nature that would be required to be reported in response to Item 6(e) of Schedule 14A of Regulation 14A (or a response to any similar item on any similar schedule or form) promulgated under the Securities Exchange Act of 1934, as amended, whether or not the Company is then subject to such reporting requirement.

(d) Corporate Status describes the status of a person as a current or former director or officer of the Company or current or former director, manager, partner, officer, employee, agent or trustee of any other Enterprise which such person is or was serving at the request of the Company.

(e) Enforcement Expenses shall include all reasonable attorneys' fees, court costs, transcript costs, fees of experts, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees, and all other out-of-pocket disbursements or expenses of the types customarily incurred in connection with an action to enforce indemnification or advancement rights, or an appeal from such action. Expenses, however, shall not include fees, salaries, wages or benefits owed to Indemnitee.

(f) Enterprise shall mean any corporation (other than the Company), partnership, joint venture, trust, employee benefit plan, limited liability company, or other legal entity of which Indemnitee is or was serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee.

(g) Expenses shall include all reasonable attorneys' fees, court costs, transcript costs, fees of experts, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees, and all other out-of-pocket disbursements or expenses of the types customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, being or preparing to be a witness in, or otherwise participating in, a Proceeding or an appeal resulting from a Proceeding. Expenses, however, shall not include amounts paid in settlement by Indemnitee, the amount of judgments or fines against Indemnitee or fees, salaries, wages or benefits owed to Indemnitee.

(h) Independent Counsel means a law firm, or a partner (or, if applicable, member or shareholder) of such a law firm, that is experienced in matters of Delaware corporation law and neither presently is, nor in the past five (5) years has been, retained to represent: (i) the Company, any subsidiary of the Company, any Enterprise or Indemnitee in any matter material to any such party; or (ii) any other party to the Proceeding giving rise to a claim for indemnification hereunder. Notwithstanding the foregoing, the term "Independent Counsel" shall not include any Person who, under the applicable standards of professional conduct then prevailing, would have a conflict of interest in representing either the Company or Indemnitee in an action to determine Indemnitee's rights under this Agreement. The Company agrees to pay the reasonable fees and expenses of the Independent Counsel referred to above and to fully indemnify such counsel against any and all expenses, claims, liabilities and damages arising out of or relating to this Agreement or its engagement pursuant hereto.

(i) “Person” shall mean (i) an individual, a corporation, a partnership, a limited liability company, an association, a joint stock company, a trust, a business trust, a government or political subdivision, any unincorporated organization, or any other association or entity including any successor (by merger or otherwise) thereof or thereto, and (ii) a “group” as that term is used for purposes of Section 13(d)(3) of the Securities Exchange Act of 1934, as amended.

(j) The term “Proceeding” shall include any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, investigation, inquiry, administrative hearing or any other actual, threatened or completed proceeding, whether brought in the right of the Company or otherwise and whether of a civil, criminal, administrative, regulatory or investigative nature, and whether formal or informal, in which Indemnatee was, is or will be involved as a party or otherwise by reason of the fact that Indemnatee is or was [a director or] an officer of the Company or is or was serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee of any Enterprise or by reason of any action taken by Indemnatee or of any action taken on his or her part while acting as [a director or] an officer of the Company or while serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee of any Enterprise, in each case whether or not serving in such capacity at the time any liability or expense is incurred for which indemnification, reimbursement or advancement of expenses can be provided under this Agreement; provided, however, that the term “Proceeding” shall not include any action, suit or arbitration, or part thereof, initiated by Indemnatee to enforce Indemnatee’s rights under this Agreement as provided for in Section 12(a) of this Agreement.

Section 3. Indemnity in Third-Party Proceedings. The Company shall indemnify Indemnatee to the extent set forth in this Section 3 if Indemnatee is, or is threatened to be made, a party to or a participant in any Proceeding, other than a Proceeding by or in the right of the Company to procure a judgment in its favor. Pursuant to this Section 3, Indemnatee shall be indemnified against all Expenses, judgments, fines, penalties, excise taxes, and amounts paid in settlement actually and reasonably incurred by Indemnatee or on his or her behalf in connection with such Proceeding or any claim, issue or matter therein, if Indemnatee acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the Company and, in the case of a criminal proceeding, had no reasonable cause to believe that his or her conduct was unlawful.

Section 4. Indemnity in Proceedings by or in the Right of the Company. The Company shall indemnify Indemnatee to the extent set forth in this Section 4 if Indemnatee is, or is threatened to be made, a party to or a participant in any Proceeding by or in the right of the Company to procure a judgment in its favor. Pursuant to this Section 4, Indemnatee shall be indemnified against all Expenses actually and reasonably incurred by Indemnatee or on his or her behalf in connection with such Proceeding or any claim, issue or matter therein, if Indemnatee acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the Company. No indemnification for Expenses shall be made under this Section 4 in respect of any claim, issue or matter as to which Indemnatee shall have been finally adjudged by a court to be liable to the Company, unless and only to the extent that the Delaware Court of Chancery (the “Delaware Court”) shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, Indemnatee is fairly and reasonably entitled to indemnification for such expenses as the Delaware Court shall deem proper.

Section 5. Indemnification for Expenses of a Party Who is Wholly or Partly Successful. Notwithstanding any other provisions of this Agreement and except as provided in Section 7, to the extent that Indemnitee is a party to or a participant in any Proceeding and is successful in such Proceeding or in defense of any claim, issue or matter therein, the Company shall indemnify Indemnitee against all Expenses actually and reasonably incurred by him or her in connection therewith. If Indemnitee is not wholly successful in such Proceeding but is successful as to one or more but less than all claims, issues or matters in such Proceeding, the Company shall indemnify Indemnitee against all Expenses actually and reasonably incurred by Indemnitee or on his or her behalf in connection with each successfully resolved claim, issue or matter. For purposes of this Section and without limitation, the termination of any claim, issue or matter in such a Proceeding by dismissal, with or without prejudice, shall be deemed to be a successful result as to such claim, issue or matter.

Section 6. Reimbursement for Expenses of a Witness or in Response to a Subpoena. Notwithstanding any other provision of this Agreement, to the extent that Indemnitee, by reason of his or her Corporate Status, (i) is a witness in any Proceeding to which Indemnitee is not a party and is not threatened to be made a party or (ii) receives a subpoena with respect to any Proceeding to which Indemnitee is not a party and is not threatened to be made a party, the Company shall reimburse Indemnitee for all Expenses actually and reasonably incurred by him or her or on his or her behalf in connection therewith.

Section 7. Exclusions. Notwithstanding any provision in this Agreement to the contrary, the Company shall not be obligated under this Agreement:

(a) to indemnify for amounts otherwise indemnifiable hereunder (or for which advancement is provided hereunder) if and to the extent that Indemnitee has otherwise actually received such amounts under any insurance policy, contract, agreement or otherwise; provided that the foregoing shall not apply to any personal or umbrella liability insurance maintained by Indemnitee;

(b) to indemnify for an accounting of profits made from the purchase and sale (or sale and purchase) by Indemnitee of securities of the Company within the meaning of Section 16(b) of the Securities Exchange Act of 1934, as amended, or similar provisions of state statutory law or common law, or from the purchase or sale by Indemnitee of such securities in violation of Section 306 of the Sarbanes-Oxley Act of 2002;

(c) to indemnify for any reimbursement of, or payment to, the Company by Indemnitee of any bonus or other incentive-based or equity-based compensation or of any profits realized by Indemnitee from the sale of securities of the Company pursuant to Section 304 of SOX or any formal policy of the Company adopted by the Board (or a committee thereof), or any other remuneration paid to Indemnitee if it shall be determined by a final judgment or other final adjudication that such remuneration was in violation of law;

(d) to indemnify with respect to any Proceeding, or part thereof, brought by Indemnitee against the Company, any legal entity which it controls, any director or officer thereof or any third party, unless (i) the Board has consented to the initiation of such Proceeding or part thereof and (ii) the Company provides the indemnification, in its sole discretion, pursuant to the powers vested in the Company under applicable law; provided, however, that this Section 7(d) shall not apply to (A) counterclaims or affirmative defenses asserted by Indemnitee in an action brought against Indemnitee or (B) any action brought by Indemnitee for indemnification or advancement from the Company under this Agreement or under any directors' and officers' liability insurance policies maintained by the Company in the suit for which indemnification or advancement is being sought as described in Section 12; or

(e) to provide any indemnification or advancement of expenses that is prohibited by applicable law (as such law exists at the time payment would otherwise be required pursuant to this Agreement).

Section 8. Advancement of Expenses. Subject to Section 9(b), the Company shall advance, to the extent not prohibited by law, the Expenses incurred by Indemnitee in connection with any Proceeding, and such advancement shall be made as incurred, and such advancement shall be made within thirty (30) days after the receipt by the Company of a statement or statements requesting such advances (including any invoices received by Indemnitee, which such invoices may be redacted as necessary to avoid the waiver of any privilege accorded by applicable law) from time to time, whether prior to or after final disposition of any Proceeding. Advances shall be unsecured and interest free. Advances shall be made without regard to Indemnitee's (i) ability to repay the expenses, (ii) ultimate entitlement to indemnification under the other provisions of this Agreement, and (iii) entitlement to and availability of insurance coverage, including advancement, payment or reimbursement of defense costs, expenses or covered loss under the provisions of any applicable insurance policy (including, without limitation, whether such advancement, payment or reimbursement is withheld, conditioned or delayed by the insurer(s)). Indemnitee shall qualify for advances upon the execution and delivery to the Company of this Agreement which shall constitute an undertaking providing that Indemnitee undertakes to the fullest extent required by law to repay the advance if and to the extent that it is ultimately determined by a court of competent jurisdiction in a final judgment, not subject to appeal, that Indemnitee is not entitled to be indemnified by the Company. No other form of undertaking shall be required. The right to advances under this paragraph shall in all events continue until final disposition of any Proceeding, including any appeal therein. Nothing in this Section 8 shall limit Indemnitee's right to advancement pursuant to Section 12(e) of this Agreement.

Section 9. Procedure for Notification and Defense of Claim.

(a) To obtain indemnification under this Agreement, Indemnitee shall submit to the Company a written request therefor specifying the basis for the claim, the amounts for which Indemnitee is seeking payment under this Agreement, and all documentation related thereto as reasonably requested by the Company.

(b) In the event that the Company shall be obligated hereunder to provide indemnification for or make any advancement of Expenses with respect to any Proceeding, the

Company shall be entitled to assume the defense of such Proceeding, or any claim, issue or matter therein, with counsel approved by Indemnitee (which approval shall not be unreasonably withheld or delayed) upon the delivery to Indemnitee of written notice of the Company's election to do so. After delivery of such notice, approval of such counsel by Indemnitee and the retention of such counsel by the Company, the Company will not be liable to Indemnitee under this Agreement for any fees or expenses of separate counsel subsequently employed by or on behalf of Indemnitee with respect to the same Proceeding; provided that (i) Indemnitee shall have the right to employ separate counsel in any such Proceeding at Indemnitee's expense and (ii) if (A) the employment of separate counsel by Indemnitee has been previously authorized by the Company, (B) Indemnitee shall have reasonably concluded that there may be a conflict of interest between the Company and Indemnitee in the conduct of such defense, (C) the Company shall not continue to retain such counsel to defend such Proceeding, or (D) a Change in Control shall have occurred, then the fees and expenses actually and reasonably incurred by Indemnitee with respect to his or her separate counsel shall be Expenses hereunder.

(c) In the event that the Company does not assume the defense in a Proceeding pursuant to paragraph (b) above, then the Company will be entitled to participate in the Proceeding at its own expense.

(d) The Company shall not be liable to indemnify Indemnitee under this Agreement for any amounts paid in settlement of any Proceeding effected without its prior written consent (which consent shall not be unreasonably withheld or delayed). Without limiting the generality of the foregoing, the fact that an insurer under an applicable insurance policy delays or is unwilling to consent to such settlement or is or may be in breach of its obligations under such policy, or the fact that directors' and officers' liability insurance is otherwise unavailable or not maintained by the Company, may not be taken into account by the Company in determining whether to provide its consent. The Company shall not, without the prior written consent of Indemnitee (which consent shall not be unreasonably withheld or delayed), enter into any settlement which (i) includes an admission of fault of Indemnitee, any non-monetary remedy imposed on Indemnitee or any monetary damages for which Indemnitee is not wholly and actually indemnified hereunder or (ii) with respect to any Proceeding with respect to which Indemnitee may be or is made a party or may be otherwise entitled to seek indemnification hereunder, does not include the full release of Indemnitee from all liability in respect of such Proceeding.

Section 10. Procedure Upon Application for Indemnification.

(a) Upon written request by Indemnitee for indemnification pursuant to Section 9(a), a determination, if such determination is required by applicable law, with respect to Indemnitee's entitlement to indemnification hereunder shall be made in the specific case by one of the following methods: (x) if a Change in Control shall have occurred and indemnification is being requested by Indemnitee hereunder in his or her capacity as a director of the Company, by Independent Counsel in a written opinion to the Board; or (y) in any other case, (i) by a majority vote of the disinterested directors, even though less than a quorum; (ii) by a committee of disinterested directors designated by a majority vote of the disinterested directors, even though less than a quorum; or (iii) if there are no disinterested directors or if the disinterested directors so direct, by Independent Counsel in a written opinion to the Board. For purposes hereof,

disinterested directors are those members of the Board who are not parties to the action, suit or proceeding in respect of which indemnification is sought. In the case that such determination is made by Independent Counsel, a copy of Independent Counsel's written opinion shall be delivered to Indemnitee and, if it is so determined that Indemnitee is entitled to indemnification, payment to Indemnitee shall be made within thirty (30) days after such determination. Indemnitee shall cooperate with the Independent Counsel or the Company, as applicable, in making such determination with respect to Indemnitee's entitlement to indemnification, including providing to such counsel or the Company, upon reasonable advance request, any documentation or information which is not privileged or otherwise protected from disclosure and which is reasonably available to Indemnitee and reasonably necessary to such determination. The Company shall likewise cooperate with Indemnitee and Independent Counsel, if applicable, in making such determination with respect to Indemnitee's entitlement to indemnification, including providing to such counsel and Indemnitee, upon reasonable advance request, any documentation or information which is not privileged or otherwise protected from disclosure and which is reasonably available to the Company and reasonably necessary to such determination. Any out-of-pocket costs or expenses (including reasonable attorneys' fees and disbursements) actually and reasonably incurred by Indemnitee in so cooperating with the Independent Counsel or the Company shall be borne by the Company (irrespective of the determination as to Indemnitee's entitlement to indemnification) and the Company hereby indemnifies and agrees to hold Indemnitee harmless therefrom.

(b) If the determination of entitlement to indemnification is to be made by Independent Counsel pursuant to Section 10(a), the Independent Counsel shall be selected by the Board[; provided that, if a Change in Control shall have occurred and indemnification is being requested by Indemnitee hereunder in his or her capacity as a director of the Company, the Independent Counsel shall be selected by Indemnitee]. Indemnitee [or the Company, as the case may be,] may, within ten (10) days after written notice of such selection, deliver to the Company [or Indemnitee, as the case may be,] a written objection to such selection; provided, however, that such objection may be asserted only on the ground that the Independent Counsel so selected does not meet the requirements of "Independent Counsel" as defined in Section 2 of this Agreement, and the objection shall set forth with particularity the factual basis of such assertion. Absent a proper and timely objection, the Person so selected shall act as Independent Counsel. If such written objection is so made and substantiated, the Independent Counsel so selected may not serve as Independent Counsel unless and until such objection is withdrawn or the Delaware Court has determined that such objection is without merit. If, within twenty (20) days after the later of (i) submission by Indemnitee of a written request for indemnification pursuant to Section 9(a), and (ii) the final disposition of the Proceeding, including any appeal therein, no Independent Counsel shall have been selected without objection, either Indemnitee or the Company may petition the Delaware Court for resolution of any objection which shall have been made by Indemnitee or the Company to the selection of Independent Counsel and/or for the appointment as Independent Counsel of a Person selected by the court or by such other Person as the court shall designate. The Person with respect to whom all objections are so resolved or the Person so appointed shall act as Independent Counsel under Section 10(a) hereof. Upon the due commencement of any judicial proceeding or arbitration pursuant to Section 12(a) of this Agreement, Independent Counsel shall be discharged and relieved of any further responsibility in such capacity (subject to the applicable standards of professional conduct then prevailing).

(c) Notwithstanding anything to the contrary contained in this Agreement, the determination of entitlement to indemnification under this Agreement shall be made without regard to the Indemnitee's entitlement to and availability of insurance coverage, including advancement, payment or reimbursement of defense costs, expenses or covered loss under the provisions of any applicable insurance policy (including, without limitation, whether such advancement, payment or reimbursement is withheld, conditioned or delayed by the insurer(s)).

Section 11. Presumptions and Effect of Certain Proceedings.

(a) To the extent permitted by applicable law, in making a determination with respect to entitlement to indemnification hereunder, it shall be presumed that Indemnitee is entitled to indemnification under this Agreement if Indemnitee has submitted a request for indemnification in accordance with Section 9(a) of this Agreement, and the Company shall have the burden of proof and the burden of persuasion by clear and convincing evidence to overcome that presumption in connection with the making of any determination contrary to that presumption.

(b) The termination of any Proceeding or of any claim, issue or matter therein, by judgment, order, settlement or conviction, or upon a plea of guilty, nolo contendere or its equivalent, shall not (except as otherwise expressly provided in this Agreement) of itself adversely affect the right of Indemnitee to indemnification or create a presumption that Indemnitee did not act in good faith and in a manner which he or she reasonably believed to be in or not opposed to the best interests of the Company or, with respect to any criminal Proceeding, that Indemnitee had reasonable cause to believe that his or her conduct was unlawful.

(c) Indemnitee shall be deemed to have acted in good faith if Indemnitee's actions based on the records or books of account of the Company or any other Enterprise, including financial statements, or on information supplied to Indemnitee by the directors, officers, agents or employees of the Company or any other Enterprise in the course of their duties, or on the advice of legal counsel for the Company or any other Enterprise or on information or records given or reports made to the Company or any other Enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the Company or any other Enterprise. The provisions of this Section 11(c) shall not be deemed to be exclusive or to limit in any way the other circumstances in which Indemnitee may be deemed to have met the applicable standard of conduct set forth in this Agreement. In addition, the knowledge and/or actions, or failure to act, of any director, manager, partner, officer, employee, agent or trustee of the Company, any subsidiary of the Company, or any Enterprise shall not be imputed to Indemnitee for purposes of determining the right to indemnification under this Agreement. Whether or not the foregoing provisions of this Section 11(c) are satisfied, it shall in any event be presumed that Indemnitee has at all times acted in good faith and in a manner Indemnitee reasonably believed to be in or not opposed to the best interests of the Company. Anyone seeking to overcome this presumption shall have the burden of proof and the burden of persuasion by clear and convincing evidence.

Section 12. Remedies of Indemnitee.

(a) Subject to Section 12(f), in the event that (i) a determination is made pursuant to Section 10 of this Agreement that Indemnitee is not entitled to indemnification under this Agreement, (ii) advancement of Expenses is not timely made pursuant to Section 8 of this Agreement, (iii) no determination of entitlement to indemnification shall have been made pursuant to Section 10(a) of this Agreement within sixty (60) days after receipt by the Company of the request for indemnification for which a determination is to be made other than by Independent Counsel, (iv) payment of indemnification or reimbursement of expenses is not made pursuant to Section 5 or 6 or the last sentence of Section 10(a) of this Agreement within thirty (30) days after receipt by the Company of a written request therefor (including any invoices received by Indemnitee, which such invoices may be redacted as necessary to avoid the waiver of any privilege accorded by applicable law) or (v) payment of indemnification pursuant to Section 3 or 4 of this Agreement is not made within thirty (30) days after a determination has been made that Indemnitee is entitled to indemnification, Indemnitee shall be entitled to an adjudication by the Delaware Court of his or her entitlement to such indemnification or advancement. Alternatively, Indemnitee, at his or her option, may seek an award in arbitration to be conducted by a single arbitrator pursuant to the Commercial Arbitration Rules of the American Arbitration Association. Indemnitee shall commence such proceeding seeking an adjudication or an award in arbitration within 180 days following the date on which Indemnitee first has the right to commence such proceeding pursuant to this Section 12(a); provided, however, that the foregoing time limitation shall not apply in respect of a proceeding brought by Indemnitee to enforce his or her rights under Section 5 of this Agreement. The Company shall not oppose Indemnitee's right to seek any such adjudication or award in arbitration.

(b) In the event that a determination shall have been made pursuant to Section 10(a) of this Agreement that Indemnitee is not entitled to indemnification, any judicial proceeding or arbitration commenced pursuant to this Section 12 shall be conducted in all respects as a de novo trial, or arbitration, on the merits and Indemnitee shall not be prejudiced by reason of that adverse determination. In any judicial proceeding or arbitration commenced pursuant to this Section 12, the Company shall have the burden of proving Indemnitee is not entitled to indemnification or advancement, as the case may be.

(c) If a determination shall have been made pursuant to Section 10(a) of this Agreement that Indemnitee is entitled to indemnification, the Company shall be bound by such determination in any judicial proceeding or arbitration commenced pursuant to this Section 12, absent (i) a misstatement by Indemnitee of a material fact, or an omission of a material fact necessary to make Indemnitee's statement not materially misleading, in connection with the request for indemnification, or (ii) a prohibition of such indemnification under applicable law.

(d) The Company shall be precluded from asserting in any judicial proceeding or arbitration commenced pursuant to this Section 12 that the procedures and presumptions of this Agreement are not valid, binding and enforceable and shall stipulate in any such court or before any such arbitrator that the Company is bound by all the provisions of this Agreement.

(e) The Company shall indemnify Indemnitee to the fullest extent permitted by law against any and all Enforcement Expenses and, if requested by Indemnitee, shall (within thirty (30) days after receipt by the Company of a written request therefor) advance, to the extent not prohibited by law, such Enforcement Expenses to Indemnitee, which are incurred by

Indemnitee in connection with any action brought by Indemnitee for indemnification or advancement from the Company under this Agreement or under any directors' and officers' liability insurance policies maintained by the Company in the suit for which indemnification or advancement is being sought. Such written request for advancement shall include invoices received by Indemnitee in connection with such Enforcement Expenses but, in the case of invoices in connection with legal services, any references to legal work performed or to expenditures made that would cause Indemnitee to waive any privilege accorded by applicable law need not be included with the invoice.

(f) Notwithstanding anything in this Agreement to the contrary, no determination as to entitlement to indemnification under this Agreement shall be required to be made prior to the final disposition of the Proceeding, including any appeal therein.

Section 13. Non-exclusivity; Survival of Rights; Insurance; Subrogation.

(a) The rights of indemnification and to receive advancement as provided by this Agreement shall not be deemed exclusive of any other rights to which Indemnitee may at any time be entitled under applicable law, the Bylaws, any agreement, a vote of stockholders or a resolution of directors, or otherwise. No amendment, alteration or repeal of this Agreement or of any provision hereof shall limit or restrict any right of Indemnitee under this Agreement in respect of any action taken or omitted by such Indemnitee in his or her Corporate Status prior to such amendment, alteration or repeal. To the extent that a change in Delaware law, whether by statute or judicial decision, permits greater indemnification or advancement than would be afforded currently under the Bylaws and this Agreement, it is the intent of the parties hereto that Indemnitee shall enjoy by this Agreement the greater benefits so afforded by such change. No right or remedy herein conferred is intended to be exclusive of any other right or remedy, and every other right and remedy shall be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other right or remedy.

(b) To the extent that the Company maintains an insurance policy or policies providing liability insurance for directors, managers, partners, officers, employees, agents or trustees of the Company or of any other Enterprise, Indemnitee shall be covered by such policy or policies in accordance with its or their terms to the maximum extent of the coverage available for any such director, manager, partner, officer, employee, agent or trustee under such policy or policies. If, at the time of the receipt of a notice of a claim pursuant to the terms hereof, the Company has director and officer liability insurance in effect, the Company shall give prompt notice of such claim to the insurers in accordance with the procedures set forth in the respective policies. The Company shall thereafter take all necessary or desirable action to cause such insurers to pay, on behalf of the Indemnitee, all amounts payable as a result of such Proceeding in accordance with the terms of such policies. Upon request of Indemnitee, the Company shall also promptly provide to Indemnitee: (i) copies of all of the Company's potentially applicable directors' and officers' liability insurance policies, (ii) copies of such notices delivered to the applicable insurers, and (iii) copies of all subsequent communications and correspondence between the Company and such insurers regarding the Proceeding.

(c) In the event of any payment under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of recovery of Indemnitee, who shall execute all papers required and take all action necessary to secure such rights, including execution of such documents as are necessary to enable the Company to bring suit to enforce such rights.

(d) The Company's obligation to provide indemnification or advancement hereunder to Indemnitee who is or was serving at the request of the Company as a director, manager, partner, officer, employee, agent or trustee of any other Enterprise shall be reduced by any amount Indemnitee has actually received as indemnification or advancement from such other Enterprise.

Section 14. Duration of Agreement. This Agreement shall continue until and terminate upon the later of: (a) ten (10) years after the date that Indemnitee shall have ceased to serve as [both a director and] an officer of the Company or (b) one (1) year after the final termination of any Proceeding, including any appeal, then pending in respect of which Indemnitee is granted rights of indemnification or advancement hereunder and of any proceeding commenced by Indemnitee pursuant to Section 12 of this Agreement relating thereto. This Agreement shall be binding upon the Company and its successors and assigns and shall inure to the benefit of Indemnitee and his or her heirs, executors and administrators. The Company shall require and cause any successor (whether direct or indirect by purchase, merger, consolidation or otherwise) to all, substantially all or a substantial part, of the business and/or assets of the Company, by written agreement in form and substance satisfactory to Indemnitee, expressly to assume and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform if no such succession had taken place.

Section 15. Severability. If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable for any reason whatsoever: (a) the validity, legality and enforceability of the remaining provisions of this Agreement (including, without limitation, each portion of any section of this Agreement containing any such provision held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall not in any way be affected or impaired thereby and shall remain enforceable to the fullest extent permitted by law; (b) such provision or provisions shall be deemed reformed to the extent necessary to conform to applicable law and to give the maximum effect to the intent of the parties hereto; and (c) to the fullest extent possible, the provisions of this Agreement (including, without limitation, each portion of any section of this Agreement containing any such provision held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall be construed so as to give effect to the intent manifested thereby.

Section 16. Enforcement.

(a) The Company expressly confirms and agrees that it has entered into this Agreement and assumed the obligations imposed on it hereby in order to induce Indemnitee to serve or continue to serve as [a director and] an officer of the Company, and the Company acknowledges that Indemnitee is relying upon this Agreement in serving as [a director and] an officer of the Company.

(b) This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior agreements and understandings, oral, written and implied, between the parties hereto with respect to the subject matter hereof; provided, however, that this Agreement is a supplement to and in furtherance of the Bylaws and applicable law, and shall not be deemed a substitute therefor, nor to diminish or abrogate any rights of Indemnitee thereunder.

Section 17. Modification and Waiver. No supplement, modification or amendment, or waiver of any provision, of this Agreement shall be binding unless executed in writing by the parties thereto. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provisions of this Agreement nor shall any waiver constitute a continuing waiver. No supplement, modification or amendment of this Agreement or of any provision hereof shall limit or restrict any right of Indemnitee under this Agreement in respect of any action taken or omitted by such Indemnitee prior to such supplement, modification or amendment.

Section 18. Notice by Indemnitee. Indemnitee agrees promptly to notify the Company in writing upon being served with any summons, citation, subpoena, complaint, indictment, information or other document relating to any Proceeding or matter which may be subject to indemnification, reimbursement or advancement as provided hereunder. The failure of Indemnitee to so notify the Company or any delay in notification shall not relieve the Company of any obligation which it may have to Indemnitee under this Agreement or otherwise, unless, and then only to the extent that, the Company did not otherwise learn of the Proceeding and such delay is materially prejudicial to the Company's ability to defend such Proceeding or matter; and, provided, further, that notice will be deemed to have been given without any action on the part of Indemnitee in the event the Company is a party to the same Proceeding.

Section 19. Notices. All notices, requests, demands and other communications under this Agreement shall be in writing and shall be deemed to have been duly given if (i) delivered by hand and receipted for by the party to whom said notice or other communication shall have been directed, (ii) mailed by certified or registered mail with postage prepaid, on the third business day after the date on which it is so mailed, (iii) mailed by reputable overnight courier and receipted for by the party to whom said notice or other communication shall have been directed or (iv) sent by facsimile transmission, with receipt of oral confirmation that such transmission has been received:

- (a) If to Indemnitee, at such address as Indemnitee shall provide to the Company.
- (b) If to the Company to:

Vigil Neuroscience, Inc.
One Broadway, Suite 07-300 Cambridge, MA 02142
Attention: Chief Executive Officer

or to any other address as may have been furnished to Indemnitee by the Company.

Section 20. Contribution. To the fullest extent permissible under applicable law, if the indemnification provided for in this Agreement is unavailable to Indemnitee for any reason whatsoever, the Company, in lieu of indemnifying Indemnitee, shall contribute to the amount incurred by Indemnitee, whether for judgments, fines, penalties, excise taxes, amounts paid or to be paid in settlement and/or for Expenses, in connection with any Proceeding in such proportion as is deemed fair and reasonable in light of all of the circumstances in order to reflect (i) the relative benefits received by the Company and Indemnitee in connection with the event(s) and/or transaction(s) giving rise to such Proceeding; and/or (ii) the relative fault of the Company (and its directors, officers, employees and agents) and Indemnitee in connection with such event(s) and/or transactions.

Section 21. Internal Revenue Code Section 409A. The Company intends for this Agreement to comply with the Indemnification exception under Section 1.409A-1(b)(10) of the regulations promulgated under the Internal Revenue Code of 1986, as amended (the "Code"), which provides that indemnification of, or the purchase of an insurance policy providing for payments of, all or part of the expenses incurred or damages paid or payable by Indemnitee with respect to a bona fide claim against Indemnitee or the Company do not provide for a deferral of compensation, subject to Section 409A of the Code, where such claim is based on actions or failures to act by Indemnitee in his or her capacity as a service provider of the Company. The parties intend that this Agreement be interpreted and construed with such intent.

Section 22. Applicable Law and Consent to Jurisdiction. This Agreement and the legal relations among the parties shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware, without regard to its conflict of laws rules. Except with respect to any arbitration commenced by Indemnitee pursuant to Section 12(a) of this Agreement, the Company and Indemnitee hereby irrevocably and unconditionally (i) agree that any action or proceeding arising out of or in connection with this Agreement shall be brought only in the Delaware Court, and not in any other state or federal court in the United States of America or any court in any other country, (ii) consent to submit to the exclusive jurisdiction of the Delaware Court for purposes of any action or proceeding arising out of or in connection with this Agreement, (iii) consent to service of process at the address set forth in Section 19 of this Agreement with the same legal force and validity as if served upon such party personally within the State of Delaware, (iv) waive any objection to the laying of venue of any such action or proceeding in the Delaware Court, and (v) waive, and agree not to plead or to make, any claim that any such action or proceeding brought in the Delaware Court has been brought in an improper or inconvenient forum.

Section 23. Headings. The headings of the paragraphs of this Agreement are inserted for convenience only and shall not be deemed to constitute part of this Agreement or to affect the construction thereof.

Section 24. Identical Counterparts. This Agreement may be executed in one or more counterparts, each of which shall for all purposes be deemed to be an original but all of which together shall constitute one and the same Agreement. Only one such counterpart signed by the party against whom enforceability is sought needs to be produced to evidence the existence of this Agreement.

Section 25. Monetary Damages Insufficient/Specific Enforcement. The Company and Indemnitee agree that a monetary remedy for breach of this Agreement may be inadequate, impracticable and difficult of proof, and further agree that such breach may cause Indemnitee irreparable harm. Accordingly, the parties hereto agree that Indemnitee may enforce this Agreement by seeking injunctive relief and/or specific performance hereof, without any necessity of showing actual damage or irreparable harm (having agreed that actual and irreparable harm will result in not forcing the Company to specifically perform its obligations pursuant to this Agreement) and that by seeking injunctive relief and/or specific performance, Indemnitee shall not be precluded from seeking or obtaining any other relief to which he may be entitled. The Company and Indemnitee further agree that Indemnitee shall be entitled to such specific performance and injunctive relief, including temporary restraining orders, preliminary injunctions and permanent injunctions, without the necessity of posting bonds or other undertaking in connection therewith. The Company acknowledges that in the absence of a waiver, a bond or undertaking may be required of Indemnitee by the Court, and the Company hereby waives any such requirement of a bond or undertaking.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties have caused this Agreement to be signed as of the day and year first above written.

VIGIL NEUROSCIENCE, INC.

By: _____

Name:

Title:

[Name of Indemnitee]

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the use in this Registration Statement on Form S-1 of Vigil Neuroscience, Inc. of our report dated October 8, 2021, except for the effects of the reverse stock split discussed in Note 15 to the consolidated financial statements, as to which the date is January 3, 2022, relating to the financial statements, which appears in this Registration Statement. We also consent to the reference to us under the heading “Experts” in such Registration Statement.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
January 3, 2022