

As confidentially submitted to the Securities and Exchange Commission on August 13, 2018.
 This Amendment No. 2 to the draft registration statement has not been filed publicly with the Securities and Exchange Commission and all information contained herein remains confidential.

Registration No. 333-

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

**FORM S-1
 REGISTRATION STATEMENT
 UNDER
 THE SECURITIES ACT OF 1933**

Gritstone Oncology, 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)
 5858 Horton Street, Suite 210
 Emeryville, California 94608
 (510) 871-6100

47-4859534
 (I.R.S. Employer
 Identification Number)

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

Andrew Allen, M.D., Ph.D.
 President and Chief Executive Officer
 Gritstone Oncology, Inc.
 5858 Horton Street, Suite 210
 Emeryville, California 94608
 (510) 871-6100

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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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, 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, or a smaller reporting 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 Accelerated filer
 Non-accelerated filer (Do not check if a smaller reporting company) 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 | Proposed maximum aggregate offering price(1) | Amount of registration fee |
|--|--|----------------------------|
| Common Stock, \$0.0001 par value per share | \$ | \$ |

(1) Estimated solely for the purpose of calculating the amount of the registration fee in accordance with Rule 457(o) under the Securities Act of 1933, as amended. Includes the additional shares that the underwriters have the option to purchase from the registrant, if any. See "Underwriting."

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 which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

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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 _____, 2018

Shares



Common Stock

This is an initial public offering of shares of common stock of Gritstone Oncology, Inc. We are offering _____ shares of our common stock.

Prior to this offering, there has been no public market for the common stock. It is currently estimated that the initial public offering price per share will be between \$ _____ and \$ _____.

We have applied to list our common stock on The Nasdaq Global Market under the symbol "GRTS."

We are an "emerging growth company" as defined under the federal securities laws and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and may elect to do so in future filings.

Investing in our common stock involves a high degree of risk. See the section titled "Risk Factors" beginning on page 12 to read about factors you should consider before buying shares of our common stock.

Neither the Securities and Exchange Commission nor any other regulatory body has approved or disapproved of these securities, or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

| | Per Share | Total |
|----------------------------------|-----------|----------|
| Initial public offering price | \$ _____ | \$ _____ |
| Underwriting discounts(1) | \$ _____ | \$ _____ |
| Proceeds, before expenses, to us | \$ _____ | \$ _____ |

(1) See the section titled "Underwriting" for additional information regarding compensation payable to the underwriters.

To the extent that the underwriters sell more than _____ shares of common stock, the underwriters have the option to purchase up to an additional _____ shares from us at the initial public offering price less the underwriting discount.

The underwriters expect to deliver the shares against payment in New York, New York on _____, 2018.

Goldman Sachs & Co. LLC

Cowen

Barclays

BTIG

Prospectus dated _____, 2018

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Through and including _____, 2018 (the 25th day 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 is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

Neither we nor the underwriters have authorized anyone to provide you with information that is different from that contained in this prospectus or in any free writing prospectus we may authorize to be delivered or made available to 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 offering to sell shares of common stock and seeking offers to buy shares of common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date on the front of this prospectus, or other earlier date stated in this prospectus, regardless of the time of delivery of this prospectus or any sale of shares of our common stock.

No action is being taken in any jurisdiction outside the United States to permit a public offering of our common stock or possession or distribution of this prospectus in that jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus applicable to that jurisdiction.

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Gritstone Oncology™, Gritstone™, EDGE™, GRANITE™, SLATE™ and our logo are some of our trademarks and service marks used in this prospectus. This prospectus also includes trademarks, tradenames and service marks that are the property of other organizations. Solely for convenience, our trademarks, service marks and tradenames referred to in this prospectus may appear without the ® and ™ symbol, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or the right of the applicable licensor to these trademarks, service marks and tradenames.

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 deciding to invest in our common stock, you should read this entire prospectus carefully, including the sections of this prospectus titled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes contained elsewhere in this prospectus. Some of the statements in this prospectus constitute forward-looking statements that involve risks and uncertainties. See “Special Note Regarding Forward-Looking Statements.” Unless the context otherwise requires or as otherwise noted, references in this prospectus to the “Company,” “Gritstone Oncology,” “Gritstone,” “we,” “us” and “our” refer to Gritstone Oncology, Inc.

Gritstone Oncology, Inc.

Overview

We are an immuno-oncology company developing tumor-specific cancer immunotherapies to fight multiple cancer types. Our goal is to extend the benefits of immunotherapy by leveraging new insights into the immune system’s ability to destroy cancer cells, based on the study of patients treated with checkpoint inhibitors such as anti-PD-(L)1 antibodies. A key hypothesis that has emerged in the field of immuno-oncology is that there are large groups of cancer patients whose tumors have successfully evaded the immune system (so called “cold” tumors) despite having markers that could be recognized by the immune system. Our approach seeks to generate a therapeutic immune response in these patients by unleashing the demonstrated natural power of a patient’s own immune system to recognize short tumor-specific peptide sequences presented on cancer cells, referred to as tumor-specific neoantigens, or TSNA, in order to destroy tumor cells. The importance of TSNA as targets for the immune system was first recognized in 2014 and 2015 in patients treated with checkpoint inhibitors by two of our co-founders, Dr. Timothy Chan and Dr. Naiyer Rizvi. Leveraging these insights, we have built our tumor-specific immunotherapy approach on two key pillars—first, our proprietary Gritstone EDGETM machine learning-based platform, which gives us a powerful ability to predict from a routine tumor biopsy the TSNA that are presented on a patient’s tumor cells; and second, our ability to develop and manufacture potent immunotherapies utilizing patients’ TSNA to drive the patient’s immune system to attack and destroy tumors. Our tumor-specific immunotherapy portfolio consists of our personalized immunotherapy product candidate, GRANITE-001, which is manufactured uniquely for each patient, and our “off-the-shelf” immunotherapy product candidate series, SLATE, which is designed for selected subsets of patients with common tumor neoantigens.

Our tumor-specific immunotherapy has been tested pre-clinically in non-human primates, the animal model that most closely approximates human immune responses. In this model, we have demonstrated that our immunotherapy elicits potent and sustained T cell responses against delivered antigens. Of particular note, we have shown an ability to effectively prime naïve CD8+ T cells to high levels (comparable to those seen in responders to T cell therapies in clinical studies) against antigens that are new to the recipient’s immune system (a so-called *de novo* primed response)—one of the highest immunologic hurdles in activating T cell responses. Because human tumors (and their TSNA) can successfully evade the immune system, overcoming this hurdle by priming a CD8+ T cell response is a key goal of our immunotherapy approach.

We intend to initiate a first-in-human Phase 1/2 clinical trial of GRANITE-001, our first personalized immunotherapy product candidate, in the second half of 2018, evaluating it in the treatment of common solid tumors, including metastatic non-small cell lung cancer and

gastroesophageal, bladder and colorectal cancers, in each case in combination with checkpoint inhibitors provided by our collaborator, Bristol-Myers Squibb Company, or BMS. The Phase 1 portion of our Phase 1/2 trial will seek to establish a dose for further investigation in Phase 2 and to evaluate safety, tolerability and, importantly, immunogenicity of our product candidate. We will seek to further evaluate efficacy and safety in the Phase 2 cohort expansion portion in several common solid tumor types. Our second tumor-specific product candidate series, SLATE, will utilize the same antigen delivery system as GRANITE-001 but contains a fixed cassette with TSNA that are shared across a subset of cancer patients rather than a cassette unique to an individual patient, providing us with an off-the-shelf alternative to our personalized manufactured product candidate, GRANITE-001. We intend to initiate a Phase 2 clinical trial of SLATE-001, our first off-the-shelf product candidate, in the second half of 2019.

Gritstone EDGE—Our TSNA Prediction Platform

The first pillar of our tumor-specific cancer immunotherapy approach is our understanding of TSNA and the application of our proprietary, artificial intelligence based Gritstone EDGE platform to predict the presence of a patient's unique TSNA on tumor cells. While there are frequently hundreds of mutations in the DNA of a tumor cell, only approximately 1% of these mutations are actually transcribed, translated and processed into a unique "non-self" peptide sequence that is presented on the surface of tumor cells and can be recognized by a patient's own T cells. Furthermore, these rare TSNA are usually unique to each individual patient's tumor. Current technologies cannot predict the presence of TSNA with sufficient accuracy to design a therapy that is likely to be effective. The Gritstone EDGE platform consists of proprietary machine learning models that use DNA/RNA sequence data derived from a patient's tumor biopsy to predict which mutations will generate TSNA most likely to be presented on the tumor cell surface. Applying our EDGE platform to data from human tumors, we have shown a nine-fold improvement in the accuracy of prediction with our platform compared to publicly available approaches. We believe that mutations selected by our EDGE platform have a much higher likelihood of being useful targets for immunization than mutations selected using industry standard methods.

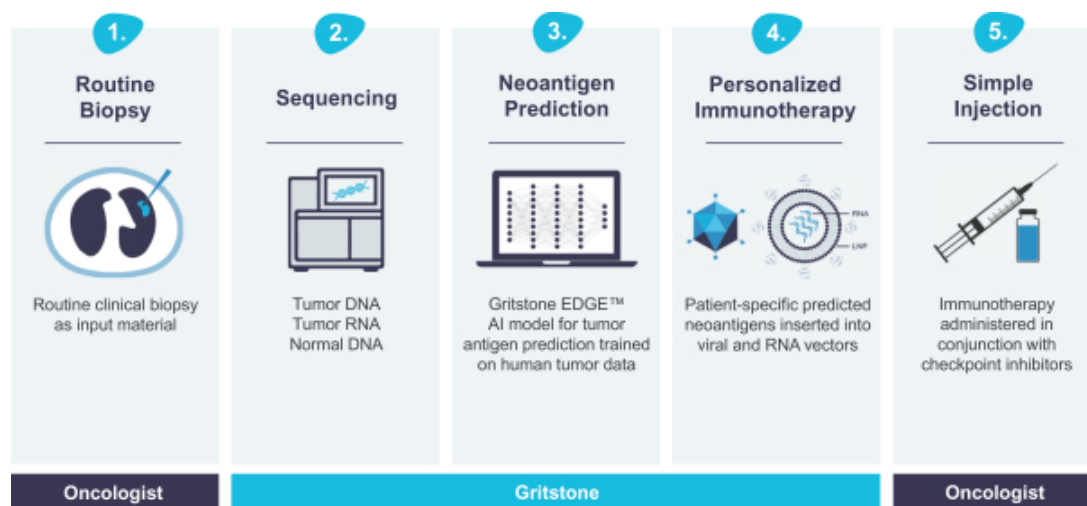
Our Tumor-Specific Neoantigen Therapies

The second pillar of our tumor-specific cancer immunotherapy approach is our ability to develop and manufacture a patient-specific therapeutic to direct a robust T cell response to those TSNA predicted to be presented on the patient's tumor. Each of our immunotherapy product candidates comprise a sequential immunization with a viral prime and RNA boosts delivered by intramuscular injection, which we refer to as our heterologous prime-boost. In our GRANITE-001 product candidate, each of the viral prime and RNA boosts contain a patient-specific set of predicted TSNA, whereas the viral prime and RNA boost in our SLATE product candidate series contains a fixed TSNA cassette that is designed for the subset of patients who carry the relevant neoantigens. Grounded in traditional infectious disease vaccine immunology, and informed by recent successes against pathogens like malaria and Ebola, this two-step immunization utilizes a prime and a boost to educate the patient's T cells to detect TSNA and destroy tumor cells. In non-human primate models, we have demonstrated a profound and specific CD8+ and CD4+ T cell response to antigens administered in this way, CD8+ T cells being the critical cell type for tumor cell killing, and often the hardest response to generate in primates and humans.

Our tumor-specific immunotherapy candidates are intended to fit easily into a community oncology setting and to be administered in earlier lines of treatment, in combination with checkpoint inhibitors to further drive a robust T cell response, rather than only in refractory or relapsed cancers. We have designed our personalized immunotherapy candidate such that oncologists will not have to alter their treatment practices, and we believe that this will extend the utility of our medicines into the community setting and not limit their use to scarce centers of excellence.

Our Personalized Immunotherapy Process (GRANITE-001)

Our personalized immunotherapy process leverages our proprietary EDGE platform to predict the TSNA that will be presented on a patient's tumor, allowing us to create a patient-specific heterologous prime-boost immunotherapy that is designed to elicit a potent anti-tumor T cell response. We believe that our personalized immunotherapy product candidate will have an addressable population of approximately 70-80% of patients with certain common solid tumor types that typically carry large numbers of mutations, such as lung cancer. Our process begins with a routine tumor needle biopsy from the patient. We utilize our in-house sequencing capabilities with the tumor sample and then apply our proprietary EDGE platform to derive a set of predicted TSNA likely to be presented on the patient's tumor. Using these TSNA, we design highly potent personalized immunotherapies containing the relevant neoantigens to be administered by simple intramuscular injection. Our process is outlined in the figure below.

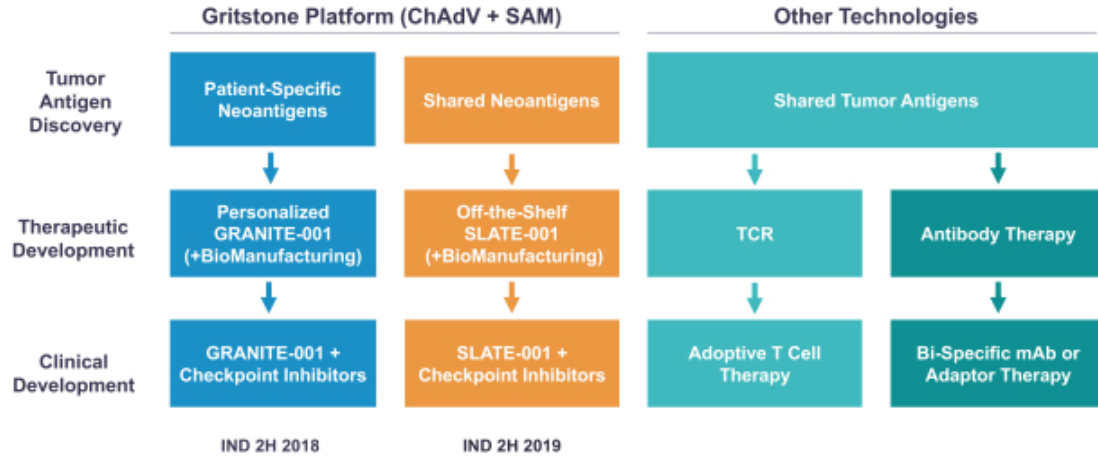


Our EDGE Antigen Identification Engine to Design Off-The-Shelf Neoantigen-Directed Products

While many patients with solid tumors may carry multiple TSNA unique to that patient, it has been shown that a minority of patients will carry a TSNA that is shared with other patients. The presence of these shared TSNA is likely to occur when a functionally important mutation (termed a driver mutation), which is recurrently observed across different patients, carries the potential to be processed and presented by the tumor cell as a neoantigen. Early analyses suggest that while each such shared neoantigen may only be found on less than 2% of patients with a particular tumor type, our heterologous prime-boost system can deliver at least 20 of these TSNA, which we believe will result in the off-the-shelf product candidate having an addressable population of approximately 10-15% of patients within common solid tumor types such as colorectal cancer and lung cancer. Our off-the-shelf product candidates are expected to be specific to a particular tumor type, and the TSNA module is fixed for each product. As a result, the essential aspect to the utilization of the off-the-shelf-product candidate is the ability to accurately identify patients whose tumors contain one of the TSNA represented within the off-the-shelf product candidate. The routine screening of patients' tumors using commercially-available genomic screens, together with identification of the patient's HLA type from blood with a standard clinical assay, enables identification of such patients.

Our EDGE Antigen Identification Engine—Beyond Tumor-Specific Neoantigens

Beyond TSNA-directed therapeutics, we are leveraging our expertise in cancer genomics and our tumor antigen discovery platform to identify novel peptide sequences (not mutated) that may be shared across common tumor types (shared tumor antigens), which we believe are likely to have value as targets to direct T cells onto tumors specifically. Shared tumor antigen targets enable us to opportunistically partner or develop additional therapeutic approaches to redirect T cells onto tumors using these highly specific targets. These approaches include (1) “off-the-shelf” shared tumor antigens in our heterologous prime-boost platform, (2) modifying the receptors of the patient’s own T cells to help them recognize tumor targets (adoptive T cell therapy), and (3) using small adapter proteins that have two recognition arms—one for tumors and one for T cells (bispecific antibodies), as shown in the figure below.



Our Team and Investors

To deliver on the promise of our novel therapeutic approach, we have assembled a highly experienced management team with focused expertise in each of our core disciplines of cancer genomics, immunology and vaccinology, clinical and regulatory development and biomanufacturing from several leading biotechnology companies, including Clovis Oncology, Inc., Pfizer Inc., Genentech, Inc. and Foundation Medicine, Inc. Our co-founder Dr. Andrew Allen brings experience as a co-founder and Chief Medical Officer of Clovis Oncology, Inc., with prior experience in various leadership roles at Pharmion Corporation and Chiron Corporation, where he worked on Proleukin (IL-2), the first cancer immunotherapy. The scientific advisory board includes selected experts in relevant disciplines, including Dr. Timothy Chan (Memorial Sloan Kettering Cancer Center) and Dr. Naiyer Rizvi (Columbia University Medical Center), who together first demonstrated that TSNA are key T cell targets in cancer patients responding to checkpoint inhibitor therapy, as well as Dr. James Gulley (National Cancer Institute), who is an international expert in cancer immunotherapy with a focus on vaccines.

We are further supported by a group of leading institutional investors, including Versant Ventures, The Column Group, Clarus, Frazier Healthcare Partners, Lilly Asia Ventures, GV, Redmile Group and Casdin Capital.

Our Strategy

Our goal is to eradicate cancer by initially developing personalized immunotherapies that focus on the unique and individual nature of a patient's tumor. Our strategy to achieve this includes the following key components:

- **Rapidly advance GRANITE-001, our lead product candidate, in multiple clinical settings, with the objective of generating a significant CD8+ T cell response to tumor-specific neoantigens.** GRANITE-001 is our first personalized immunotherapy product candidate. It is engineered to elicit a significant T cell response to selected antigens in humans (particularly CD8+ T cell responses) based upon extensive clinical experience with many different vectors in the realm of infectious disease. In the second half of 2018, we intend to submit our Investigational New Drug application, or IND, for GRANITE-001 and, upon acceptance, to initiate a first-in-human Phase 1/2 trial of our heterologous prime-boost regimen in combination with checkpoint inhibitors provided by our collaborator BMS.
- **Invest in our Gritstone EDGE platform and maximize its utility across modalities.** The EDGE platform utilizes proprietary machine learning models and an extensive dataset of over a million HLA-presented peptides from over 300 human tumor and matched normal tissue specimens. We are initially applying the platform to develop multiple formats of personalized cancer immunotherapies—including our heterologous prime-boost immunization containing TSNA (our lead program) as well as “off-the-shelf” therapies targeting shared tumor-specific antigens—in order to maximize the utility of our prediction capabilities across modalities. We intend to continually make investments to improve the EDGE platform's prediction capabilities in order to develop more efficacious medicines. Genomic and immune response data from our clinical trials will serve to further validate and refine our machine learning platform.
- **Build upon the discoveries from our Gritstone EDGE platform to rapidly move SLATE-001, our shared-TSNA product candidate, into multiple clinical settings where shared neoantigens may have utility.** This includes—but will not be limited to—KRAS-driven tumors such as colorectal cancer, pancreatic ductal carcinoma and adenocarcinomas of the lung. We plan to submit an IND for SLATE-001 in the second half of 2019, and start Phase 2 clinical trials if and when data from GRANITE-001 have confirmed acceptable safety and immunogenicity of our prime-boost vaccine platform, together with Phase 2 dosing recommendations.
- **Continue to build our in-house manufacturing capabilities to maintain the highest controls on quality and capacity.** We believe the speed, quality, reliability and scalability of our manufacturing capabilities will be a core competitive advantage to our clinical development and commercial success. We intend to internalize the majority of the manufacturing steps to drive down both cost and production time, as well as establish full control over intellectual property and product quality. We believe that operating our own manufacturing facility will provide us with enhanced control of material supply for both clinical trials and the commercial market, will enable the more rapid implementation of process changes, and will allow for better long-term margins.
- **Move tumor-specific immunotherapy into community oncology settings and earlier lines of treatment.** We are designing our tumor-specific immunotherapy product candidates to fit into a community oncology setting. This approach is designed to enable oncologists to integrate our tumor-specific immunotherapy product candidates into their treatment practices without requiring a change in the current treatment paradigm. We believe this strategy has the potential to extend the use of our medicines into the community setting, enabling rapid trial execution, and expanding commercial use beyond limited centers of research excellence.

Additionally, we intend to develop our tumor-specific immunotherapy product candidates in earlier lines of treatment, where recent clinical data with other forms of immunotherapy suggest efficacy is likely to be stronger, versus being used in highly refractory or late-stage cancer patients.

- **Enter into collaborations to realize the full potential of our platform.** The breadth of our EDGE platform enables its application to a variety of therapeutic formats, including cell therapy, bispecific antibodies and other areas where shared tumor antigens could be impactful to cancer treatment. We intend to form collaborations around certain aspects of our platform, such as shared tumor antigens, as we believe we will benefit from the resources and capabilities of other organizations in the manufacture, development and commercialization of such diverse immunotherapies.

Risks Associated with Our Business

Our ability to implement our business strategy is subject to numerous risks that you should be aware of before making an investment decision. These risks are described more fully in the section titled “Risk Factors,” immediately following this prospectus summary. These risks include the following, among others:

- We are an early-stage biopharmaceutical company with a limited operating history and no products approved for commercial sale. We have incurred significant losses since our inception, and we anticipate that we will continue to incur significant losses for the foreseeable future, which, together with our limited operating history, makes it difficult to assess our future viability.
- We will require substantial 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 product development programs, commercialization efforts or other operations.
- Our tumor-specific cancer immunotherapy approach is based on novel ideas and technologies that are unproven and may not result in marketable products, which exposes us to unforeseen risks and makes it difficult for us to predict the time and cost of product development and potential for regulatory approval.
- Our business is dependent on the successful development, regulatory approval and commercialization of our personalized immunotherapy product candidate, GRANITE-001, which is in early stages of development and has not been tested in humans.
- We may be unable to obtain regulatory approval for GRANITE-001 or any future product candidates under applicable regulatory requirements. The denial or delay of any such approval would delay commercialization of our product candidates and adversely impact our potential to generate revenue, our business and our results of operations.
- Clinical development involves a lengthy and expensive process with an uncertain outcome, and delays can occur for a variety of reasons outside of our control.
- We rely on third parties in the conduct of all of our preclinical studies and intend to rely on third parties in the conduct of all of our future clinical trials. If these third parties do not successfully carry out their contractual duties, fail to comply with applicable regulatory requirements or meet expected deadlines, we may be unable to obtain regulatory approval for GRANITE-001 or any future product candidates.

- Our success depends on our ability to protect our intellectual property and our proprietary technologies.

Corporate Information

We were founded in August 2015 as a Delaware corporation. Our principal executive offices are located at 5858 Horton Street, Suite 210, Emeryville, California 94608, and our telephone number is (510) 871-6100. Our website address is www.gritstone.com. The information on, or that can be accessed through, our website is not part of this prospectus and is not incorporated by reference herein. We have included our website address as an inactive textual reference only.

Implications of Being An Emerging Growth Company

We are an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. We will remain an emerging growth company until the earliest of (1) the last day of the fiscal year following the fifth anniversary of the consummation of this offering, (2) the last day of the fiscal year in which we have total annual gross revenue of at least \$1.07 billion, (3) the last day of the fiscal year in which we are deemed to be a "large accelerated filer" as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, which would occur if the market value of our common stock held by non-affiliates exceeded \$700.0 million as of the last business day of the second fiscal quarter of such year or (4) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period. An emerging growth company may take advantage of specified reduced reporting requirements and is relieved of certain other significant requirements that are otherwise generally applicable to public companies. As an emerging growth company:

- We will present in this prospectus only two years of audited financial statements, plus unaudited condensed financial statements for any interim period, and related management's discussion and analysis of financial condition and results of operations;
- We will avail ourselves of the exemption from the requirement to obtain an attestation and report from our auditors on the assessment of our internal control over financial reporting pursuant to the Sarbanes-Oxley Act of 2002;
- We will provide less extensive disclosure about our executive compensation arrangements; and
- We will not require stockholder non-binding advisory votes on executive compensation or golden parachute arrangements.

THE OFFERING

| | |
|--|---|
| Common stock offered by us | shares. |
| Underwriters' option to purchase additional shares from us | We have granted the underwriters a 30-day option to purchase up to additional shares at the initial public offering price, less underwriting discounts and commissions. |
| Common stock to be outstanding immediately after this offering | shares (or shares if the underwriters exercise in full their option to purchase additional shares). |
| Use of proceeds | <p>We estimate that the net proceeds from this offering will be approximately \$ million, or approximately \$ million if the underwriters exercise their option to purchase additional shares in full, at an assumed initial public offering price of \$ per share, the midpoint of the range set forth on the cover of this prospectus, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.</p> <p>We currently expect to use the net proceeds from this offering to fund our planned Phase 1/2 clinical trial of GRANITE-001, continued buildout of our manufacturing facility, internal research and development activities, including preclinical and IND-enabling activities for SLATE-001, and for working capital and general corporate purposes. See "Use of Proceeds" on page 72 for a more complete description of the intended use of proceeds from this offering.</p> |
| Risk factors | See "Risk Factors" beginning on page 12 and other information included in this prospectus for a discussion of factors that you should consider carefully before deciding to invest in our common stock. |
| Proposed The Nasdaq Global Market symbol | "GRTS" |

The number of shares of common stock to be outstanding after this offering is based on 147,565,581 shares of common stock outstanding as of July 31, 2018 and includes an aggregate of 128,623,424 shares of common stock issuable upon conversion of our outstanding convertible preferred stock, and excludes the following:

- 11,507,414 shares of common stock issuable upon the exercise of outstanding stock options as of July 31, 2018 having a weighted-average exercise price of \$0.22 per share;
- 5,580,429 shares of common stock reserved for issuance pursuant to future awards under our 2015 Equity Incentive Plan, as amended, as of July 31, 2018, which will become available for issuance under our 2018 Incentive Award Plan after the consummation of this offering;

- shares of common stock reserved for issuance pursuant to future awards under our 2018 Incentive Award Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which will become effective on the day prior to the first public trading date of our common stock; and
- shares of common stock reserved for issuance under our 2018 Employee Stock Purchase Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which will become effective on the day prior to the first public trading date of our common stock.

In addition, unless we specifically state otherwise, all information in this prospectus reflects and assumes the following:

- a -for- reverse stock split of our common stock and convertible preferred stock to be effected prior to the effectiveness of the registration statement of which this prospectus is a part;
- the automatic conversion of all shares of our outstanding convertible preferred stock at July 31, 2018 into an aggregate of 128,623,424 shares of common stock immediately prior to the consummation of this offering;
- the filing and effectiveness of our amended and restated certificate of incorporation in Delaware and the adoption of our amended and restated bylaws, each of which will occur immediately prior to the consummation of this offering;
- no exercise of outstanding stock options subsequent to July 31, 2018; and
- no exercise of the underwriters' option to purchase up to an additional shares of common stock.

Unless otherwise specified and unless the context otherwise requires, we refer to our Series A, Series B and Series C convertible preferred stock collectively as "convertible preferred stock" in this prospectus, as well as for financial reporting purposes and in the financial tables included in this prospectus, as more fully explained in Note 9 to our audited financial statements and Note 8 to our unaudited interim condensed financial statements included in this prospectus.

Summary Financial Data

The following tables present our selected financial data for the periods and as of the dates indicated. We have derived the following summary statements of operations and comprehensive loss data for the years ended December 31, 2016 and 2017, and the balance sheet data as of December 31, 2016 and 2017, from our audited financial statements and related notes included elsewhere in this prospectus. We have derived the summary statements of operations and comprehensive loss data for the six months ended June 30, 2017 and 2018, and the balance sheet data as of June 30, 2018, from our unaudited interim condensed financial statements and notes included elsewhere in this prospectus. The unaudited interim condensed financial statements have been prepared in accordance with accounting principles generally accepted in the United States and on the same basis as the audited financial statements and reflect, in the opinion of management, all adjustments, which include only normal, recurring adjustments that are necessary for the fair presentation of the financial information in those statements. Our historical results are not necessarily indicative of the results that may be expected in the future, and the results for the six months ended June 30, 2018, are not necessarily indicative of results to be expected for the full year or any other period. You should read the financial data below in conjunction with our financial statements and related notes included elsewhere in this prospectus and the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations."

| | Year Ended December 31, | | Six Months Ended June 30, | |
|---|---|--------------------|------------------------------|--------------------|
| | 2016 | 2017 | 2017 | 2018 |
| | | | (unaudited) | |
| | (in thousands, except share and per share data) | | | |
| Statements of Operations and Comprehensive Loss Data: | | | | |
| Operating Expenses: | | | | |
| Research and development | \$ 13,916 | \$ 35,691 | \$ 11,855 | \$ 24,090 |
| General and administrative | 5,064 | 6,072 | 2,840 | 4,852 |
| Total operating expenses | <u>18,980</u> | <u>41,763</u> | <u>14,695</u> | <u>28,942</u> |
| Loss from operations | (18,980) | (41,763) | (14,695) | (28,942) |
| Interest income, net | 230 | 386 | 138 | 94 |
| Net loss | (18,750) | (41,377) | (14,557) | (28,848) |
| Unrealized loss on marketable securities | (2) | (71) | (2) | (31) |
| Other comprehensive loss | <u>\$ (18,752)</u> | <u>\$ (41,448)</u> | <u>\$ (14,559)</u> | <u>\$ (28,879)</u> |
| Net loss per share, basic and diluted(1) | <u>\$ (1.62)</u> | <u>\$ (3.00)</u> | <u>\$ (1.11)</u> | <u>\$ (1.83)</u> |
| Weighted-average number of shares outstanding, basic and diluted(1) | <u>11,540,581</u> | <u>13,793,417</u> | <u>13,156,419</u> | <u>15,772,769</u> |
| Pro forma net loss per share, basic and diluted(1) | | <u>\$ (0.44)</u> | | <u>\$ (0.21)</u> |
| Pro forma weighted-average number of shares outstanding, basic and diluted(1) | | <u>94,529,860</u> | | <u>138,628,706</u> |

(1) See Notes 2 and 12 to our audited financial statements, and Notes 2 and 10 to our unaudited interim condensed financial statements, included elsewhere in this prospectus for further details on the calculations of our basic and diluted net loss per share, basic and diluted pro forma net loss per share and the weighted-average number of shares used in the computation of the per share amounts.

The table below presents our balance sheet data as of June 30, 2018:

- on an actual basis;
- on a pro forma basis to give effect to: (i) our issuance and sale during July 2018 of 1,058,201 shares of our Series C convertible preferred stock for cash consideration of \$2.0 million; (ii) the automatic conversion of all shares of our convertible preferred stock outstanding at June 30, 2018, together with the shares of Series C convertible preferred stock we issued during July 2018, into an aggregate of 128,623,424 shares of our common stock, which will be effective immediately prior to the consummation of this offering; and (iii) the filing and effectiveness of our amended and restated certificate of incorporation, which will occur immediately prior to the consummation of this offering; and
- on a pro forma as adjusted basis to give further effect to the sale of _____ shares of common stock in this offering at an assumed initial public offering price of \$ _____ per share, the midpoint of the range set forth on the cover of this prospectus, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

| | As of June 30, 2018 | | |
|--|---------------------|--|-----------------------------|
| | Actual | Pro Forma (unaudited) (in thousands) | Pro Forma As Adjusted(1) |
| Balance Sheet Data: | | | |
| Cash, cash equivalents and marketable securities | \$ 64,490 | \$ 66,490 | \$ |
| Working capital(2) | 61,697 | 63,697 | |
| Total assets | 95,951 | 97,951 | |
| Convertible preferred stock | 165,865 | — | |
| Accumulated deficit | (90,475) | (90,475) | |
| Total stockholders' equity | 78,672 | 80,672 | |

- (1) Each \$1.00 increase (decrease) in the assumed initial public offering price of \$ _____ per share (the midpoint of the range set forth on the cover of this prospectus), would increase (decrease) the amount of each of cash, cash equivalents and marketable securities, working capital, total assets and total stockholders' equity by \$ _____ 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 the underwriting discount and commissions and estimated offering expenses payable by us. We may also increase (decrease) the number of shares we are offering. Each increase (decrease) of 1,000,000 in the number of shares we are offering would increase (decrease) the amount of each of cash, cash equivalents and marketable securities, working capital, total assets and total stockholders' equity by approximately \$ _____ million, assuming the assumed initial public offering price of \$ _____ per share (the midpoint of the range set forth on the cover of this prospectus), remains the same and after deducting the underwriting discount and commissions and estimated offering expenses payable by us. The pro forma as adjusted information is illustrative only and we will adjust this information based on the actual initial public offering price and other terms of this offering determined at pricing.
- (2) We define working capital as current assets less current liabilities. See our audited financial statements and unaudited interim condensed financial statements and related notes included elsewhere in this prospectus for details regarding our current assets and current liabilities.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this prospectus, including our financial statements and the related notes and “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” before deciding whether to invest in our common stock. The occurrence of any of the events or developments described below could have a material adverse effect on our business, results of operations, financial condition, prospects and stock price. In such an event, the market price of our common stock could decline, and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations.

Risks Related to Our Limited Operating History, Financial Condition and Capital Requirements

We are an early-stage biopharmaceutical company with a limited operating history and no products approved for commercial sale. We have incurred significant losses since our inception, and we anticipate that we will continue to incur significant losses for the foreseeable future, which, together with our limited operating history, makes it difficult to assess our future viability.

Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We are an early-stage biopharmaceutical company, and we have only a limited operating history upon which you can evaluate our business and prospects. We have no products approved for commercial sale, have not generated any revenue from product sales and have incurred losses in each year since our inception in August 2015. In addition, we have limited experience and 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. We have only recently completed IND enabling studies of our first personalized cancer immunotherapy candidate, GRANITE-001, and have not yet initiated any clinical trials.

We have had significant operating losses since our inception. Our net losses for the years ended December 31, 2016 and 2017 were approximately \$18.8 million and \$41.4 million, respectively, and for the six months ended June 30, 2017 and 2018 were approximately \$14.6 million and \$28.8 million, respectively. As of June 30, 2018, we had an accumulated deficit of \$90.5 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. GRANITE-001 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. In addition, upon the completion of this offering we expect to incur additional costs associated with operating as a public company. We also do not yet have a sales organization or commercial infrastructure and, accordingly, we will incur significant expenses to develop a sales organization or commercial infrastructure in advance of generating any commercial product sales. We expect to continue to incur losses for the foreseeable future, and we anticipate these losses will increase as we continue to develop GRANITE-001, SLATE-001 and any future product candidates, conduct clinical trials and pursue research and development activities. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our stockholders’ equity and working capital.

We will require substantial 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 product development programs, commercialization efforts or other operations.

Since our inception, we have invested a significant portion of our efforts and financial resources in research and development activities for tumor-specific cancer immunotherapies, and working to establish our in-house manufacturing capabilities. Preclinical studies and clinical trials and additional research and development activities will require substantial funds to complete. As of June 30, 2018, we had capital resources consisting of cash, cash equivalents and marketable securities of \$64.5 million. We believe that we will continue to expend substantial resources for the foreseeable future in connection with the development of GRANITE-001, SLATE-001 and any other future cancer immunotherapy candidates we may choose to pursue, as well as the continued development of our manufacturing capabilities and other corporate uses. Specifically, in the near term, we expect to incur substantial expenses as we advance GRANITE-001 and SLATE-001 through clinical development, seek regulatory approval, prepare for and, if approved, proceed to commercialization, continue our research and development efforts and invest in our manufacturing facility. These expenditures will include costs associated with conducting preclinical studies and clinical trials, obtaining regulatory approvals, and manufacturing and supply, as well as marketing and selling any products approved for sale. In addition, other unanticipated costs may arise. 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 GRANITE-001, SLATE-001 or any future immunotherapy product candidates.

We believe that the net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, will allow us to fund our operating plan for at least _____ months following the date of this offering. However, our operating plans and other demands on our capital 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 sources, such as strategic collaborations. Such financing may result in dilution to stockholders, imposition of burdensome debt covenants and repayment obligations, or other restrictions that may affect our business. If we raise additional funds through licensing or collaboration arrangements with third parties, we may have to relinquish valuable rights to our product candidates, or grant licenses on terms that are not favorable to us. 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 product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all.

Our future capital requirements depend on many factors, including:

- the scope, progress, results and costs of developing our tumor-specific immunotherapy product candidates, and conducting preclinical studies and clinical trials, including our planned Phase 1/2 clinical trial for GRANITE-001, which we expect to initiate in the second half of 2018;
- the scope, progress, results and costs of conducting studies and clinical trials for our SLATE product candidate series, including the Phase 2 clinical trial for SLATE-001, which we expect to initiate in the second half of 2019;
- the timing of, and the costs involved in, obtaining regulatory approvals for our tumor-specific immunotherapy candidates;
- the number and characteristics of any additional product candidates we develop or acquire;

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- the timing and amount of any milestone, royalty or other payments we are required to make pursuant to any current or future collaboration or license agreement;
- the cost of manufacturing our tumor-specific immunotherapies we successfully commercialize, including the cost of scaling up our internal manufacturing operations;
- the cost of building a sales force in anticipation of product commercialization;
- the cost of commercialization activities, including marketing, sales and distribution costs;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the expenses needed to attract, hire and retain skilled personnel;
- the costs associated with being a public company;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing our intellectual property portfolio; and
- the timing, receipt and amount of sales of any future approved products, if any.

Additional funds may not be available when we need them, on terms that are acceptable to us, or at all. If adequate funds are not available to us on a timely basis, we may be required to:

- delay, limit, reduce or terminate preclinical studies, clinical trials or other research and development activities or eliminate one or more of our development programs altogether; or
- delay, limit, reduce or terminate our efforts to establish manufacturing and sales and marketing capabilities or other activities that may be necessary to commercialize our tumor-specific immunotherapy candidates, or reduce our flexibility in developing or maintaining our sales and marketing strategy.

We also could be required to seek funds through arrangements with collaborators or others that may require us to relinquish rights or jointly own some aspects of our technologies or product candidates that we would otherwise pursue on our own. We do not expect to realize revenue from sales of products or royalties from licensed products in the foreseeable future, if at all, and unless and until a product candidate is clinically tested, approved for commercialization and successfully marketed. To date, we have primarily financed our operations through the sale of equity securities. We will be required to seek additional funding in the future and currently intend to do so through collaborations, public or private equity offerings or debt financings, credit or loan facilities or a combination of one or more of these funding sources. Our ability to raise additional funds will depend on financial, economic and other factors, many of which are beyond our control. Additional funds may not be available to us on acceptable terms or at all. If we raise additional funds by issuing equity securities, our stockholders will suffer dilution and the terms of any financing may adversely affect the rights of our stockholders. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. Debt financing, if available, is likely to involve restrictive covenants limiting our flexibility in conducting future business activities, and, in the event of insolvency, debt holders would be repaid before holders of our equity securities received any distribution of our corporate assets.

Our recurring losses from operations and negative cash flows have raised substantial doubt regarding our ability to continue as a going concern.

Our recurring losses from operations and negative cash flows raise substantial doubt about our ability to continue as a going concern. As a result, our independent registered public accounting firm

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included an explanatory paragraph in its report on our financial statements as of, and for the year ended, December 31, 2017. Our ability to continue as a going concern will require us to obtain additional financing to fund our operations. The perception of our ability to continue as a going concern may make it more difficult for us to obtain financing for the continuation of our operations and could result in the loss of confidence by investors, contract manufacturers and employees.

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.

Our quarterly and annual operating results may fluctuate significantly, which makes it difficult for us to predict our future operating results. These fluctuations may occur due to a variety of factors, many of which are outside of our control and may be difficult to predict, including:

- the timing and cost of, and level of investment in, research, development and commercialization activities, which may change from time to time;
- the timing of receipt of approvals from regulatory authorities in the United States and internationally;
- the timing and status of enrollment for our clinical trials;
- the cost of manufacturing, as well as building out our supply chain, which may vary depending on the quantity of production, the cost of continuing to establish and scale up our internal manufacturing capabilities, and the terms of any agreements we enter into with third-party suppliers;
- timing and amount of any milestone, royalty or other payments due under any current or future collaboration or license agreement;
- coverage and reimbursement policies with respect to our tumor-specific immunotherapy product candidates, if approved, and potential future drugs that compete with our products;
- expenditures that we may incur to acquire, develop or commercialize additional products and technologies;
- the level of demand for our cancer immunotherapy products, if approved, which may vary significantly over time;
- future accounting pronouncements or changes in our accounting policies; and
- the timing and success or failure of preclinical studies and clinical trials for our product candidates or competing product candidates, or any other change in the competitive landscape of our industry, including consolidation among our competitors or partners.

The cumulative effects 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 analysts or investors for any period. If our revenue or 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 revenue or earnings guidance we may provide.

Risks Related to Our Business

Our business is dependent on the successful development, regulatory approval and commercialization of our personalized immunotherapy product candidate, GRANITE-001, which is in the early stages of development and has not been tested in humans.

We have no products approved for sale and our initial product candidate, GRANITE-001, a personalized immunotherapy, has only recently completed IND-enabling studies and has not been tested in humans. As such, we face significant translational risk with GRANITE-001 specifically and our tumor-specific immunotherapy approach generally. The success of our business, including our ability to finance our company and generate any revenue in the future, will primarily depend on the successful development, regulatory approval and commercialization of GRANITE-001, as well as other product candidates derived from our tumor-specific immunotherapy approach, which may never occur. In the future, we may also become dependent on other product candidates that we may develop or acquire; however, no product candidates based on our tumor-specific immunotherapy approach have been tested in humans and given our early stage of development, it may be many years, if at all, before we have demonstrated the safety and efficacy of a personalized immunotherapy treatment sufficient to warrant approval for commercialization.

We have not previously submitted a biologics license application, or BLA, to the U.S. Food and Drug Administration, or FDA, or similar regulatory approval filings to comparable foreign authorities, for any product candidate, and we cannot be certain that our product candidates will be successful in clinical trials or receive regulatory approval. Further, GRANITE-001, SLATE-001 or any future product candidates may not receive regulatory approval even if they are successful in clinical trials. If we do not receive regulatory approvals for our product candidates, we may not be able to continue our operations. Even if we successfully obtain regulatory approvals to market a product candidate, our revenue will be dependent, in part, upon the size of the markets in the territories for which we gain regulatory approval and have commercial rights. If the markets or patient subsets that we are targeting are not as significant as we estimate, we may not generate significant revenues from sales of such products, if approved.

We plan to seek regulatory approval to commercialize our product candidates both in the United States and in selected foreign countries. While the scope of regulatory approval generally is similar in other countries, in order to obtain separate regulatory approval in other countries we must comply with numerous and varying regulatory requirements of such countries regarding safety and efficacy. Other countries also have their own regulations governing, among other things, clinical trials and commercial sales, as well as pricing and distribution of our product candidates, and we may be required to expend significant resources to obtain regulatory approval and to comply with ongoing regulations in these jurisdictions.

The clinical and commercial success of our current and any future product candidates will depend on a number of factors, including the following:

- our ability to raise any additional required capital on acceptable terms, or at all;
- our ability to complete IND-enabling studies and successfully submit an IND;
- timely completion of our preclinical studies and clinical trials, which may be significantly slower or cost more than we currently anticipate and will depend substantially upon the performance of third-party contractors;
- whether we are required by the FDA or similar foreign regulatory agencies to conduct additional clinical trials or other studies beyond those planned to support approval of our product candidates;

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- acceptance of our proposed indications and primary endpoint assessments relating to the proposed indications of our product candidates by the FDA and similar foreign regulatory authorities;
- our ability to consistently manufacture on a timely basis our personalized immunotherapy candidates;
- our ability, and the ability of any third parties with whom we contract, to remain in good standing with regulatory agencies and develop, validate and maintain commercially viable manufacturing processes that are compliant with current good manufacturing practices, or cGMPs;
- our ability to demonstrate to the satisfaction of the FDA and similar foreign regulatory authorities the safety, efficacy and acceptable risk-benefit profile of our product candidates;
- the prevalence, duration and severity of potential side effects or other safety issues experienced with our product candidates or future approved products, if any;
- the timely receipt of necessary marketing approvals from the FDA and similar foreign regulatory authorities;
- achieving and maintaining, and, where applicable, ensuring that our third-party contractors achieve and maintain, compliance with our contractual obligations and with all regulatory requirements applicable to our lead product candidate or any future product candidates or approved products, if any;
- the willingness of physicians, operators of hospitals and clinics and patients to utilize or adopt our personalized cancer immunotherapy approach;
- our ability to successfully develop a commercial strategy and thereafter commercialize GRANITE-001, SLATE-001 or any future product candidates in the United States and internationally, if approved for marketing, sale and distribution in such countries and territories, whether alone or in collaboration with others;
- the availability of coverage and adequate reimbursement from managed care plans, private insurers, government payors (such as Medicare and Medicaid) and other third-party payors for any of our product candidates that may be approved;
- the convenience of our treatment or dosing regimen;
- acceptance by physicians, payors and patients of the benefits, safety and efficacy of our product candidate or any future product candidates, if approved, including relative to alternative and competing treatments;
- patient demand for our current or future product candidates, if approved;
- our ability to establish and enforce intellectual property rights in and to our product candidates; and
- our ability to avoid third-party patent interference, intellectual property challenges or intellectual property infringement claims.

These factors, many of which are beyond our control, could cause us to experience significant delays or an inability to obtain regulatory approvals or commercialize our current or future product candidates. Even if regulatory approvals are obtained, we may never be able to successfully commercialize any product candidates. Accordingly, we cannot provide assurances that we will be able to generate sufficient revenue through the sale of our product candidate or any future product candidates to continue our business or achieve profitability.

Our tumor-specific cancer immunotherapy approach is based on novel ideas and technologies that are unproven and may not result in marketable products, which exposes us to unforeseen risks and makes it difficult for us to predict the time and cost of product development and potential for regulatory approval.

We are using our proprietary EDGE tumor-antigen prediction platform to develop tumor-specific immunotherapy product candidates to treat cancer. Our foundational science and product development approach are based on our ability to predict the presence of a patient's tumor-specific neoantigens, or TSNA, and develop a TSNA-directed therapy that will elicit a meaningful T cell response. We believe that this approach may offer an improved therapeutic effect by driving an intense, focused T cell attack selectively upon a patient's tumor. However, this approach to treating cancer is novel and the scientific research that forms the basis of our efforts to predict the presence of TSNA and to develop TSNA-directed cancer immunotherapy candidates is both preliminary and limited. Neither of our tumor-specific immunotherapy product candidates have been tested in humans, and the results of our preclinical animal studies may not translate into humans. For example, our prediction model may fail to accurately predict the presence of TSNA, resulting in little or no T cell activity, or our therapy may fail to elicit a significant or durable enough T cell response to effectively destroy a tumor. As such, we cannot assure you that that even if we are able to develop personalized cancer immunotherapy candidates capable of recognizing TSNA and eliciting a T cell response, that such therapy would safely and effectively treat cancers. We may spend substantial funds attempting to develop this approach and never succeed in developing a marketable therapeutic.

No regulatory authority has granted approval for a personalized cancer immunotherapy based on a heterologous prime-boost approach. As such, we believe the FDA has limited experience with evaluating our approach, which may increase the complexity, uncertainty and length of the regulatory approval process for our product candidates. We may never receive approval to market and commercialize any product candidate. Even if we obtain regulatory approval, the approval may be for targets, disease indications, lines of therapy or patient populations that are not as broad as we intended or desired or may require labeling that includes significant use or distribution restrictions or safety warnings. We may be required to perform additional or unanticipated clinical trials to obtain approval or be subject to post-marketing testing requirements to maintain regulatory approval. If our personalized immunotherapy candidates prove to be ineffective, unsafe or commercially unviable, our entire technology platform and pipeline would have little, if any, value, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

Results of earlier studies and trials of our product candidates may not be predictive of future trial results.

Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure or delay can occur at any time during the clinical trial process. Success in preclinical studies and early clinical trials does not ensure that later clinical trials will be successful. A number of companies in the biotechnology and pharmaceutical industries have suffered significant setbacks in clinical trials, even after positive results in earlier preclinical studies or clinical trials. These setbacks have been caused by, among other things, preclinical findings made while clinical trials were underway and safety or efficacy observations made in clinical trials, including previously unreported adverse events. Notwithstanding any potential promising results in earlier studies and trials, we cannot be certain that we will not face similar setbacks. Even if our clinical trials are completed, the results may not be sufficient to obtain regulatory approval for our product candidates. In addition, the results of our preclinical animal studies, including our non-human primate studies, may not be predictive of the results of outcomes in human clinical trials. For example, our tumor-specific cancer immunotherapy candidates and any future product candidates may demonstrate different chemical, biological and pharmacological properties in patients than they do in laboratory studies or may interact with human biological systems in unforeseen or harmful ways. Product candidates in later stages of clinical trials

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may fail to show the desired pharmacological properties or safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials. Even if we are able to initiate and complete clinical trials, the results may not be sufficient to obtain regulatory approval for our product candidates.

Clinical development involves a lengthy and expensive process with an uncertain outcome, and delays can occur for a variety of reasons outside of our control.

Clinical development is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. Although we have completed IND-enabling studies, and we expect to file an IND with the FDA and initiate a Phase 1/2 clinical trial in the second half of 2018 for GRANITE-001, we may experience delays in obtaining the FDA's authorization to initiate clinical studies under such anticipated IND, or in initiating or completing our planned studies and trials of GRANITE-001. Additionally, we cannot be certain that studies or trials for GRANITE-001, SLATE-001 or any future product candidates will begin on time, not require redesign, enroll an adequate number of subjects on time or be completed on schedule, if at all. Clinical trials can be delayed or terminated for a variety of reasons, including delays or failures related to:

- the FDA or comparable foreign regulatory authorities disagreeing as to the design or implementation of our clinical trials;
- delays in obtaining regulatory authorization to commence a trial;
- reaching agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining institutional review board, or IRB, approval at each trial site;
- recruiting an adequate number of suitable patients to participate in a trial;
- having subjects complete a trial or return for post-treatment follow-up;
- clinical sites deviating from trial protocol or dropping out of a trial;
- addressing subject safety concerns that arise during the course of a trial;
- adding a sufficient number of clinical trial sites;
- obtaining sufficient quantities of product candidate for use in preclinical studies or clinical trials from third-party suppliers; or
- accessing checkpoint inhibitors for use in combination with our product candidate in preclinical studies or clinical trials, including checkpoint inhibitors that have not been approved by the FDA for such use.

We may experience numerous adverse or unforeseen events during, or as a result of, preclinical studies and clinical trials that could delay or prevent our ability to receive marketing approval or commercialize our product candidates, including:

- we may receive feedback from regulatory authorities that requires us to modify the design of our clinical trials;
- clinical trials of our product candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon our development programs, including our personalized cancer immunotherapy program;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials at a higher rate than we anticipate;

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- we or our third-party contractors may fail to comply with regulatory requirements, fail to maintain adequate quality controls, or be unable to produce sufficient product supply to conduct and complete preclinical studies or clinical trials of our product candidates in a timely manner, or at all;
- we or our investigators might have to suspend or terminate clinical trials of our product candidates for various reasons, including non-compliance with regulatory requirements, a finding that our product candidates have undesirable side effects or other unexpected characteristics, or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical trials of our product candidates may be greater than we anticipate;
- the quality of our product candidates or other materials necessary to conduct preclinical studies or clinical trials of our product candidates may be insufficient or inadequate;
- regulators may revise the requirements for approving our product candidates, or such requirements may not be as we anticipate; and
- future collaborators may conduct clinical trials in ways they view as advantageous to them but that are suboptimal for us.

If we are required to conduct additional clinical trials or other testing of our product candidates beyond those that we currently contemplate, if we are unable to successfully complete clinical trials of our product candidates or other testing, if the results of these trials or tests are not positive or are only moderately positive or if there are safety concerns, we may:

- incur unplanned costs;
- be delayed in obtaining marketing approval for our product candidates or not obtain marketing approval at all;
- obtain marketing approval in some countries and not in others;
- obtain marketing approval for indications or patient populations that are not as broad as intended or desired;
- obtain marketing approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;
- be subject to additional post-marketing testing requirements, which could be expensive and time consuming; or
- have the treatment removed from the market after obtaining marketing approval.

We could also encounter delays if a clinical trial is suspended or terminated by us, by the IRBs of the institutions in which such trials are being conducted, by the Data Safety Monitoring Board, or DSMB, for such trial or by the FDA or other regulatory authorities. Such authorities may suspend or terminate a clinical trial 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, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

Further, conducting clinical trials in foreign countries, as we may do for certain of our product candidates, presents additional risks that may delay completion of our clinical trials. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of

differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks relevant to such foreign countries.

Principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and may receive cash or equity compensation in connection with such services. If these relationships and any related compensation result in perceived or actual conflicts of interest, or a regulatory authority concludes that the financial relationship may have affected the interpretation of the trial, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized, which could result in the delay or rejection of the marketing application we submit. Any such delay or rejection could prevent or delay us from commercializing our current or future product candidates.

If any of our preclinical studies or clinical trials of our product candidates are delayed or terminated, the commercial prospects of our product candidates may be harmed, and our ability to generate revenues from any of these product candidates will be delayed or not realized at all. In addition, any delays in completing our clinical trials may increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may significantly harm our business, financial condition and prospects. In addition, 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 product candidates. If GRANITE-001, SLATE-001, any future product candidates or our TSNA prediction platform generally prove to be ineffective, unsafe or commercially unviable, our entire platform and approach would have little, if any, value, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

As a result of our planned trial design, the Phase 1 portion of our planned Phase 1/2 clinical trial will provide little evidence of the efficacy of our personalized immunotherapy product candidate, GRANITE-001.

Scientific principles and preclinical data suggest that combination treatment of cancer patients with our TSNA-directed immunotherapy product candidate plus checkpoint inhibitors is likely to be most effective for our target indications. The Phase 1 portion of our Phase 1/2 clinical trial, GO-004, will, consequently, involve administration of a combination therapy with GRANITE-001. Notably, all patients in the Phase 1 portion will receive anti-PD-1 monoclonal antibodies, or mAb, as background therapy. Some patients will additionally receive anti-CTLA-4 mAb. Checkpoint inhibitors such as anti-PD-1 and anti-CTLA-4 mAb are known to be effective treatments in many cancer patients and elicit objective responses in some patients. Any objective responses observed in Phase 1 will thus be in patients receiving our experimental therapy together with a checkpoint inhibitor and attribution of objective responses to the effects of GRANITE-001 alone will not be possible. We expect that efficacy will be studied carefully in the Phase 2 cohorts where the relative contributions of our personalized immunotherapy candidate and the checkpoint inhibitor will be dissected and quantified to some degree. As a result, the Phase 1 portion of our planned Phase 1/2 clinical trial will provide little evidence of the efficacy of GRANITE-001, which may not be fully understood by investors or market participants, potentially leading to negative effects on our stock price.

We may be unable to obtain regulatory approval for our tumor-specific immunotherapy product candidates under applicable regulatory requirements. The denial or delay of any such approval would delay commercialization of our product candidates and adversely impact our potential to generate revenue, our business and our results of operations.

To gain approval to market our tumor-specific immunotherapy product candidates, we must provide the FDA and foreign regulatory authorities with clinical data that adequately demonstrate the

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safety and efficacy of the product candidate for the intended indication applied for in the applicable regulatory filing. Product development is a long, expensive and uncertain process, and delay or failure can occur at any stage of any of our clinical development programs. A number of companies in the biotechnology and pharmaceutical industries have suffered significant setbacks in clinical trials, even after promising results in earlier preclinical or clinical trials. These setbacks have been caused by, among other things, preclinical findings made while clinical studies were underway and safety or efficacy observations made in clinical trials, including previously unreported adverse events. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and the results of clinical trials by other parties may not be indicative of the results in trials we may conduct.

We have not previously submitted a BLA or any other marketing application to the FDA or similar filings to comparable foreign regulatory authorities. A BLA or other similar regulatory filing requesting approval to market a product candidate must include extensive preclinical and clinical data and supporting information to establish that the product candidate is safe, pure and potent for each desired indication. The BLA or other similar regulatory filing must also include significant information regarding the chemistry, manufacturing and controls for the product.

The research, testing, manufacturing, labeling, approval, sale, marketing and distribution of biologic products are subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries, and such regulations differ from country to country. We are not permitted to market our product candidates in the United States or in any foreign countries until they receive the requisite approval from the applicable regulatory authorities of such jurisdictions.

The FDA or any foreign regulatory bodies can delay, limit or deny approval of our product candidates for many reasons, including:

- our inability to demonstrate to the satisfaction of the FDA or the applicable foreign regulatory body that any of our product candidates are safe and effective for the requested indication;
- the FDA's or the applicable foreign regulatory agency's disagreement with our trial protocol or the interpretation of data from preclinical studies or clinical trials;
- our inability to demonstrate that the clinical and other benefits of any of our product candidates outweigh any safety or other perceived risks;
- the FDA's or the applicable foreign regulatory agency's requirement for additional preclinical studies or clinical trials;
- the FDA's or the applicable foreign regulatory agency's non-approval of the formulation, labeling or specifications of GRANITE-001, SLATE-001 or any of our future product candidates;
- the FDA's or the applicable foreign regulatory agency's failure to approve our manufacturing processes and facilities or the facilities of third-party manufacturers upon which we rely; or
- the potential for approval policies or regulations of the FDA or the applicable foreign regulatory agencies to significantly change in a manner rendering our clinical data insufficient for approval.

Of the large number of biopharmaceutical products in development, only a small percentage successfully complete the FDA or other regulatory bodies' approval processes and are commercialized.

Even if we eventually complete clinical testing and receive approval from the FDA or applicable foreign agencies for any of our product candidates, the FDA or the applicable foreign regulatory agency may grant approval contingent on the performance of costly additional clinical trials which may

be required after approval. The FDA or the applicable foreign regulatory agency also may approve our lead product candidate for a more limited indication or a narrower patient population than we originally requested, and the FDA, or applicable foreign regulatory agency, may not approve our product candidates with the labeling that we believe is necessary or desirable for the successful commercialization of such product candidates.

Any delay in obtaining, or inability to obtain, applicable regulatory approval would delay or prevent commercialization of our product candidates and would materially adversely impact our business and prospects.

We have chosen to prioritize development of our personalized immunotherapy candidate, GRANITE-001. We may expend our limited resources on candidates or indications that do not yield a successful product and fail to capitalize on other product candidates or indications for which there may be a greater likelihood of success or may be more profitable.

We are currently developing our personalized cancer immunotherapy candidate based on the prediction of a patient's TSNA, in order to address a variety of cancers, including metastatic non-small cell lung cancer, or NSCLC, and gastroesophageal, bladder and colorectal cancers. We have strategically determined to initially focus solely on the development of personalized cancer immunotherapy candidates rather than pursue other types of immunotherapies based, in part, on the significant resources required to develop and manufacture immunotherapies. As a result, we may initially be foregoing other potentially more profitable therapies or those with a greater likelihood of success.

Our decisions concerning the allocation of research, development, collaboration, management and financial resources toward particular product candidates or therapeutic areas may not lead to the development of any viable commercial product and may divert resources away from better opportunities. Similarly, our potential decisions to delay, terminate or collaborate with third parties in respect of certain programs may subsequently also prove to be suboptimal and could cause us to miss valuable opportunities. If we make incorrect determinations regarding the viability or market potential of any of our programs or product candidates or misread trends in the oncology or biopharmaceutical industry, our business, financial condition and results of operations could be materially adversely affected. As a result, we may fail to capitalize on viable commercial products or profitable market opportunities, be required to forego or delay pursuit of opportunities with other product candidates or other diseases and disease pathways that may later prove to have greater commercial potential than those we choose to pursue, or relinquish valuable rights to such product candidates through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to invest additional resources to retain development and commercialization rights.

In order for our tumor-specific immunotherapy candidate, GRANITE-001, to be commercially viable, they must be utilized in early-stages of cancer treatment given the time required to manufacture the personalized therapy.

Cancer therapies are sometimes characterized as first line, second line or third line, and the FDA often approves new systemic therapies initially only for third line use. When cancer is detected early enough, surgery plus first-line systemic therapy is sometimes adequate to cure the cancer. Whenever first-line therapy, usually chemotherapy, hormone therapy, radiotherapy, surgery or a combination of these, proves unsuccessful, second line therapy may be administered. Second-line therapies often consist of more chemotherapy, radiation, antibody drugs, tumor targeted small molecules or a combination of these. Third-line therapies can include bone marrow transplantation, antibody and small molecule targeted therapies and new technologies such as adoptive cell therapies.

Traditionally, novel therapeutics are developed and approved in late (third) line therapy of cancer patients. Such clinical programs carry risk of failure because patients are often quite frail, with effects of multiple rounds of prior therapy weakening bone marrow, immune systems and general fitness. Immunotherapy, such as checkpoint inhibitors, has generally been shown to be more effective when used in earlier lines of therapy, with prospect of very durable responses in some patients and there is a trend towards earlier use of these agents, avoiding in particular cytotoxic chemotherapy agents which carry substantial toxicity and very little prospect of long-term responses. Tumor-specific immunotherapy product candidates such as GRANITE-001, as well as “off-the-shelf” product candidates such as SLATE-001, are expected to be developed in combination with checkpoint inhibitors and can, in principle, be safely used in early lines of therapy. Our clinical development program will thus aim to study our products in early lines of cancer treatment, which carry a higher safety bar, and often a greater expectation of efficacy over control arms. Such studies may thus be relatively large and slow to achieve maturity. There are new tools available to stratify cancer patients for risk of recurrence or progression, such as liquid biopsies that measure the amount of circulating tumor-derived DNA. We will utilize these tools to attempt to expedite clinical trials in early-stage cancer patients by focusing upon patients at above-average risk of disease recurrence or progression, which events are typical endpoints in clinical trials. The development of liquid biopsies is at an early stage, however, and these tools may prove to carry low utility and thus render early-stage cancer trials slow, necessarily large and expensive. The safety of our product candidates in combination with checkpoint inhibitors in early lines of therapy may also prove to be unacceptable.

We expect to seek approval of our product candidates both as late-line therapy where appropriate, but also as a first line therapy wherever possible and potentially as a second-line therapy. There is no guarantee that our product candidates, even if approved in late-line therapy, would be approved for second-line or first-line therapy. In addition, we may have to conduct additional clinical trials prior to gaining approval for second-line or first-line therapy.

GRANITE-001 will initially take approximately 16-20 weeks to be manufactured and released for human use, and this long timeline demands that either patients are consented and entered into our trials when they start a prior line of therapy, and start our therapy upon disease progression, or we initiate treatment in patients who have entered the maintenance phase of their original line of treatment. For example, we might enroll newly diagnosed patients who are due to receive front-line chemotherapy and then start their therapy with our immunotherapy product candidate as second-line treatment when they progress upon front-line chemotherapy or fail to tolerate it. This carries the risk of time delays or drop-out, i.e. patients may not progress after first-line chemotherapy for a long time, or they may decide not to receive an immunotherapy product candidate we have manufactured for them, at our expense. Alternatively we may treat first-line patients once they have completed their initial treatment and have not progressed (called maintenance therapy)—this renders efficacy harder to interpret versus simple treatment studies (any objective response cannot clearly be attributed to our products) and may be complicated by standard of care treatments which may necessarily be continued alongside our immunotherapy candidates, further confounding interpretation of efficacy.

Our projections of both the number of people who have the cancers we are targeting, as well as the subset of people with these cancers in a position to receive third-line therapy and who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, and market research and may prove to be incorrect. Regulatory authorities also may establish narrower definitions around when a patient is ineligible for other treatments than we have used in our projections, and that would reduce the size of the patient population eligible for our product candidates. Further, new studies may change the estimated incidence or prevalence of these cancers. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to

treatment with our product candidates. For instance, we anticipate that only a fraction of colorectal cancer patients will be predicted to have a high enough probability of TSNA presence to merit their inclusion into our program. Even if we obtain significant market share for our product candidates, because the potential target populations are small, we may never achieve profitability without obtaining regulatory approval for additional indications, including use as a first-line or second-line therapy.

We may not be successful in our efforts to create a pipeline of immunotherapy candidates or to develop commercially successful products. If we fail to successfully develop additional product candidates, our commercial opportunity may be limited.

We are committed to developing personalized cancer immunotherapies to fight multiple cancer types and are currently advancing multiple product candidates to address a variety of cancers, including metastatic NSCLC and colorectal, gastroesophageal and bladder cancers. Utilizing our EDGE platform, we believe we can develop multiple therapeutic classes of products that will generate a T cell immune response unleashing the natural power of the immune system on the tumor cells. However, one or more of these alternative therapeutic products may never be successfully validated in a human. In addition, identifying, developing, obtaining regulatory approval for and commercializing therapies for the treatment of cancer will require substantial additional funding beyond the net proceeds of this offering and is prone to the risks of failure inherent in therapeutic product development. Research programs to identify product candidates also require substantial technical, financial and human resources, regardless of whether or not any product candidates are ultimately identified, and even if our research programs initially show promise in identifying potential product candidates, they may fail to yield product candidates for clinical development.

We therefore cannot provide any assurance that we will be able to successfully identify additional product candidates, advance any of these additional product candidates through the development process, successfully commercialize any such additional product candidates, if approved, or assemble sufficient resources to identify, acquire, develop or, if approved, commercialize additional product candidates. If we are unable to successfully identify, acquire, develop and commercialize additional product candidates, our commercial opportunity may be limited.

If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons. The enrollment of patients depends on many factors, including:

- the patient eligibility criteria defined in the protocol;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity of patients to trial sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies, including any new therapies that may be approved for the indications we are investigating; and
- our ability to obtain and maintain patient consents.

In addition, our clinical trials may compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition will reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Since the number of qualified clinical investigators is limited, we may conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials in such clinical trial site.

Further, the targeting of TSNA may result in unforeseen events, including harming healthy tissues in humans. As a result, it is possible that safety concerns could negatively affect patient enrollment among the patient populations that we intend to treat. Delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these trials and adversely affect our ability to advance the development of our product candidates.

Our tumor-specific immunotherapy product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

As with most biological products, use of our product candidates could be associated with side effects or adverse events which can vary in severity from minor reactions to death and in frequency from infrequent to prevalent. Undesirable side effects or unacceptable toxicities caused by our product 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. While we have not yet initiated clinical trials for GRANITE-001, it is likely that there will be side effects associated with its use. Results of our trials could reveal a high and unacceptable severity and prevalence of these or other side effects.

If unacceptable side effects arise in the development of our product candidates, we, the FDA, the IRBs at the institutions in which our studies are conducted, or the DSMB could suspend or terminate our clinical trials or the FDA or comparable foreign regulatory authorities could order us to cease clinical trials or deny approval of our product candidates for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled patients to complete any of our clinical trials or result in potential product liability claims. In addition, these side effects may not be appropriately recognized or managed by the treating medical staff. We expect to have to train medical personnel using our product candidates to understand the side effect profiles for our clinical trials and upon any commercialization of any of our product candidates. Inadequate training in recognizing or managing the potential side effects of our product candidates could result in patient injury or death. Any of these occurrences may harm our business, financial condition and prospects significantly.

In addition, even if we successfully advance one of our tumor-specific immunotherapy product candidates into and through clinical trials, such trials will likely only include a limited number of subjects and limited duration of exposure to our product candidates. As a result, we cannot be assured that adverse effects of our product candidates will not be uncovered when a significantly larger number of patients are exposed to the product candidate. Further, any clinical trials may not be sufficient to determine the effect and safety consequences of taking our product candidates over a multi-year period.

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If any of our product candidates receives marketing approval and we or others later identify undesirable side effects caused by such products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw their approval of the product;
- we may be required to recall a product or change the way such product is administered to patients;
- additional restrictions may be imposed on the marketing of the particular product or the manufacturing processes for the product or any component thereof;
- regulatory authorities may require the addition of labeling statements, such as a “black box” warning or a contraindication;
- we may be required to implement a Risk Evaluation and Mitigation Strategy, or REMS, or create a Medication Guide outlining the risks of such side effects for distribution to patients;
- we could be sued and held liable for harm caused to patients;
- the product may become less competitive; and
- our reputation may suffer.

Any of the foregoing events could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved, and result in the loss of significant revenues to us, which would materially and adversely affect our results of operations and business. In addition, if one or more of our product candidates or our TSNA-directed immunotherapy approach generally prove to be unsafe, our entire technology platform and pipeline could be affected, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

Even if one of our tumor-specific immunotherapy product candidates obtains regulatory approval, they may fail to achieve the broad degree of physician and patient adoption and use necessary for commercial success.

Even if one of our tumor-specific immunotherapy product candidates receives FDA or other regulatory approvals, the commercial success of any of our current or future product candidates will depend significantly on the broad adoption and use of the resulting product by physicians and patients for approved indications. For a variety of reasons, including among other things, competitive factors, pricing or physician preference, reimbursement by insurers, the degree and rate of physician and patient adoption of our current or future product candidates, if approved, will depend on a number of factors, including:

- the clinical indications for which the product is approved and patient demand for approved products that treat those indications;
- the safety and efficacy of our product as compared to other available therapies;
- the time required for manufacture and release of our personalized immunotherapy products;
- the availability of coverage and adequate reimbursement from managed care plans, private insurers, government payors (such as Medicare and Medicaid) and other third-party payors for any of our product candidates that may be approved;
- acceptance by physicians, operators of hospitals and clinics and patients of the product as a safe and effective treatment;
- physician and patient willingness to adopt a new therapy over other available therapies for a particular indication;

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- proper training and administration of our product candidates by physicians and medical staff;
- patient satisfaction with the results and administration of our product candidates and overall treatment experience, including, for example, the convenience of any dosing regimen;
- the cost of treatment with our product candidates in relation to alternative treatments and reimbursement levels, if any, and willingness to pay for the product, if approved, on the part of insurance companies and other third-party payers, physicians and patients;
- the prevalence and severity of side effects;
- limitations or warnings contained in the FDA-approved labeling for our products;
- the willingness of physicians, operators of hospitals and clinics and patients to utilize or adopt our products as a solution;
- any FDA requirement for a REMS;
- the effectiveness of our sales, marketing and distribution efforts;
- adverse publicity about our products or favorable publicity about competitive products; and
- potential product liability claims.

We cannot assure you that our current or future product candidates, if approved, will achieve broad market acceptance among physicians and patients. Any failure by our product candidates that obtain regulatory approval to achieve market acceptance or commercial success would adversely affect our results of operations.

We currently manufacture a portion of our initial product candidate internally and rely on qualified third parties to supply components of our initial product candidate. Our inability to manufacture sufficient quantities of GRANITE-001 or any future product candidates, or the loss of our third-party suppliers, or our or their failure to comply with applicable regulatory requirements or to supply sufficient quantities at acceptable quality levels or prices, or at all, would materially and adversely affect our business.

Manufacturing is a vital component of our tumor-specific immunotherapy approach and we have invested significantly in our manufacturing facility. To ensure timely and consistent product supply assurance to our patients we currently use a hybrid product supply approach whereby certain elements of our initial product candidate are manufactured internally at our manufacturing facilities in Pleasanton, California, and other elements are manufactured at qualified third-party contract manufacturing organizations, or CMOs. All internal and third party contract manufacturing is performed under cGMP guidelines. In the future, we plan to internalize a majority of the manufacturing steps in the supply chain to optimize cost and production time, as well as establish full control over intellectual property and product quality. To do so, we will need to scale up our manufacturing operations, as we do not currently have the infrastructure or capability internally to manufacture all supplies needed for our product candidates or the materials necessary to produce our product candidates for use in the conduct of our preclinical studies or clinical trials, and we currently lack the internal resources and the capability to manufacture certain elements of our product candidates on a clinical scale. Accordingly, we will be required to make significant investments in our manufacturing facility and processing in the future, and our efforts to scale our manufacturing operations may not succeed.

In addition, our facilities and the facilities used by our CMOs to manufacture our product candidates are subject to various regulatory requirements and may be subject to the inspection of the FDA or other regulatory authorities. We do not control the manufacturing process at our CMOs, and

are completely dependent on them for compliance with current regulatory requirements. If we or our CMOs cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or comparable regulatory authorities in foreign jurisdictions, we may not be able to rely on our or their manufacturing facilities for the manufacture of elements of our product candidates. In addition, we have limited control over the ability of our CMOs to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority finds our facilities or those of our CMOs inadequate for the manufacture of our product candidates or if such facilities are subject to enforcement action in the future or are otherwise inadequate, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates.

Additionally, we and our CMOs may experience manufacturing difficulties due to resource constraints or as a result of labor disputes or unstable political environments. If we or our CMOs were to encounter any of these difficulties, our ability to provide our product candidate to patients in clinical trials, or to provide product for the treatment of patients once approved, would be jeopardized.

Our tumor-specific product candidates are biologics with complex and time-consuming manufacturing processes and we may encounter difficulties in production, particularly with respect to process development or scaling-out of our manufacturing capabilities. If we or any of our third-party manufacturers encounter such difficulties, our ability to provide supply of our product candidates for clinical trials or our products for patients, if approved, could be delayed or stopped, or we may be unable to maintain a commercially viable cost structure.

Our tumor-specific immunotherapy product candidate is considered to be a biologic and the manufacturing processes is complex, time-consuming, highly-regulated and subject to multiple risks. The manufacture of our product candidates involves extraction of genetic material from patient tumor samples, genetic manipulations at the gene sequence level, live cell culture operations, specialized formulations and aseptic fill finish operations. As a result of these complexities, the cost to manufacture biologics in general, and our personalized immunotherapy candidate, in particular, is generally higher than traditional small molecule chemical compounds, and the manufacturing process is less reliable and more difficult and time-consuming to reproduce. For example, the entire cGMP manufacturing process from biopsy receipt to the release and shipment of the personalized immunotherapy to the clinical site for patient administration will initially take approximately 16-20 weeks. In addition, our manufacturing process is in its early stages of development and will be susceptible to product loss or failure, or product variation that may adversely impact patient outcomes. Our supply chain may not function efficiently due to logistical issues associated with but not limited to the collection of a tumor biopsy from the patient, shipping such material to the manufacturing site, sequencing the biopsy specimen, manufacturing the immunotherapy components, shipping the final immunotherapy back to the patient, and injecting the patient with the immunotherapy. Manufacturing issues or different product characteristics resulting from process development activities or even minor deviations during normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If for any reason we lose a patient's biopsy or an in-process product at any point in the process, the manufacturing process for that patient will need to be restarted and the resulting delay may adversely affect that patient's outcome. Because our product candidates are manufactured specifically for an individual patient, we will be required to maintain a chain of identity and chain of custody with respect to materials as they move from the patient to the manufacturing facility, through the manufacturing process, and back to the patient. Maintaining such a chain of identity and chain of custody is difficult and complex, and the failure to do so could result in adverse patient outcomes, loss of product or regulatory action including withdrawal of our products from the market, if licensed.

As part of our process development efforts, we also may make changes to our manufacturing processes at various points during development, for various reasons, such as controlling costs,

achieving scale, decreasing processing time, increasing manufacturing success rate, or other reasons. Such changes carry the risk that they will not achieve their intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of our ongoing clinical trials or future clinical trials. In some circumstances, changes in the manufacturing process may require us to perform *ex vivo* comparability studies and to collect additional data from patients prior to undertaking more advanced clinical trials. For instance, changes in our process during the course of clinical development may require us to show the comparability of the product used in earlier clinical phases or at earlier portions of a trial to the product used in later clinical phases or later portions of the trial.

Furthermore, if microbial, viral or other contaminations are discovered in our supply of our product candidates or in our manufacturing facilities or those of our CMOs, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We cannot assure you that any such contaminations or stability failures or other issues relating to the manufacture of our product candidates will not occur in the future.

We depend on third-party suppliers for key materials used in our manufacturing processes, and the loss of these third-party suppliers or their inability to supply us with adequate materials could harm our business.

We rely on third-party suppliers for certain materials required for the production of our personalized immunotherapy candidate. Our dependence on these third-party suppliers and the challenges we may face in obtaining adequate supplies of materials involve several risks, including limited control over pricing, availability, quality and delivery schedules. As a small company, our negotiation leverage is limited and we are likely to get lower priority than our competitors that are larger than we are. We cannot be certain that our suppliers will continue to provide us with the quantities of these raw materials that we require or satisfy our anticipated specifications and quality requirements. Any supply interruption in limited or sole sourced raw materials could materially harm our ability to manufacture our product candidates until a new source of supply, if any, could be identified and qualified. We may be unable to find a sufficient alternative supply channel in a reasonable time or on commercially reasonable terms. Any performance failure on the part of our suppliers could delay the development and potential commercialization of our product candidates, including limiting supplies necessary for clinical trials and regulatory approvals, which would have a material adverse effect on our business.

We rely on third parties in the conduct of all of our preclinical studies and intend to rely on third parties in the conduct of all of our future clinical trials. If these third parties do not successfully carry out their contractual duties, fail to comply with applicable regulatory requirements or meet expected deadlines, we may be unable to obtain regulatory approval for our tumor-specific immunotherapy product candidates.

We currently do not have the ability to independently conduct preclinical studies that comply with the regulatory requirements known as good laboratory practice, or GLP, requirements. We also do not currently have the ability to independently conduct any clinical trials. The FDA and regulatory authorities in other jurisdictions require us to comply with regulations and standards, commonly referred to as good clinical practice, or GCP, requirements for conducting, monitoring, recording and reporting the results of clinical trials, in order to ensure that the data and results are scientifically credible and accurate and that the trial subjects are adequately informed of the potential risks of participating in clinical trials. We rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct GLP-compliant preclinical studies and GCP-compliant clinical trials on our product candidates properly and on time. While we have agreements governing their activities, we control only certain aspects of their activities and have limited

influence over their actual performance. The third parties with whom we contract for execution of our GLP-compliant preclinical studies and our GCP-compliant clinical trials play a significant role in the conduct of these studies and trials and the subsequent collection and analysis of data. These third parties are not our employees and, except for restrictions imposed by our contracts with such third parties, we have limited ability to control the amount or timing of resources that they devote to our programs. Although we rely on these third parties to conduct our GLP-compliant preclinical studies and GCP-compliant clinical trials, we remain responsible for ensuring that each of our preclinical studies and clinical trials is conducted in accordance with its investigational plan and protocol and applicable laws and regulations, and our reliance on the CROs does not relieve us of our regulatory responsibilities.

Many of the third parties with whom we contract may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities that could harm our competitive position. Further, under certain circumstances, these third parties may terminate their agreements with us upon as little as 10 days' prior written notice. Some of these agreements may also be terminated by such third parties under certain other circumstances, including our insolvency. If the third parties conducting our preclinical studies or our clinical trials do not adequately perform their contractual duties or obligations, experience significant business challenges, disruptions or failures, do not meet expected deadlines, terminate their agreements with us or need to be replaced, or if the quality or accuracy of the data they obtain is compromised due to their failure to adhere to our protocols or to GLPs/GCPs, or for any other reason, we may need to enter into new arrangements with alternative third parties. This could be difficult, costly or impossible, and our preclinical studies or clinical trials may need to be extended, delayed, terminated or repeated. As a result, we may not be able to obtain regulatory approval in a timely fashion, or at all, for the applicable product candidate, our financial results and the commercial prospects for our product candidates would be harmed, our costs could increase, and our ability to generate revenues could be delayed.

We face significant competition in an environment of rapid technological and scientific change, and we will face significant competition and our failure to effectively compete may prevent us from achieving significant market penetration. Most of our competitors have significantly greater resources than we do and we may not be able to successfully compete.

The biotechnology and pharmaceutical industries in particular are characterized by rapidly advancing technologies, intense competition and a strong emphasis on developing proprietary therapeutics. We compete with a variety of multinational biopharmaceutical companies and specialized biotechnology companies, as well as technology being developed at universities and other research institutions. Our competitors have developed, are developing or will develop product candidates and processes competitive with our product candidates. Competitive therapeutic treatments include those that have already been approved and accepted by the medical community and any new treatments that enter the market. We believe that a significant number of product candidates are currently under development, and may become commercially available in the future, for the treatment of diseases and other conditions for which we may try to develop product candidates. There is intense and rapidly evolving competition in the biotechnology, biopharmaceutical and antibody and immunoregulatory therapeutics fields. We believe that while our discovery platform, its associated intellectual property and our scientific and technical know-how give us a competitive advantage in this space, competition from many sources remains. Our competitors include larger and better funded biopharmaceutical, biotechnological and therapeutics companies. Moreover, we also compete with current and future therapeutics developed at universities and other research institutions.

Our success will partially depend on our ability to develop and protect therapeutics that are safer and more effective than competing products. Our commercial opportunity and success will be reduced

or eliminated if competing products that are safer, more effective, or less expensive than the therapeutics we develop.

If either of GRANITE-001 or SLATE-001 is approved, it will compete with a range of therapeutic treatments that are either in development or currently marketed. Indeed, a variety of oncology drugs and therapeutic biologics are on the market or in clinical development. Such marketed therapies range from immune checkpoint inhibitors such as Bristol-Myers Squibb Company's OPDIVO and YERVOY, Merck & Co., Inc.'s KEYTRUDA and Genentech, Inc.'s TECENTRIQ, and T cell engager immunotherapies such as Amgen, Inc.'s BLINCYTO. The most common therapeutic treatments for common solid tumors are chemotherapeutic compounds, radiation therapy, targeted therapies and now immunotherapies.

In addition, numerous compounds are in clinical development for cancer treatment. The clinical development pipeline for cancer includes small molecules, antibodies and immunotherapies from a variety of groups, including in the neoantigen space, the bispecific antibody space and engineered cell therapy and TCR space. Many of these companies are well-capitalized and, in contrast to us, have significant clinical experience.

Many of our competitors have significantly greater financial, technical, manufacturing, marketing, sales and supply resources or experience than we do. If we successfully obtain approval for any product candidate, we will face competition based on many different factors, including the safety and effectiveness of our products, the ease with which our products can be administered and the extent to which patients accept relatively new routes of administration, 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, less expensive or marketed and sold more effectively than any products we may develop. Competitive products may make any products we develop obsolete or noncompetitive before we recover the expense of developing and commercializing our product candidates. Such competitors could also recruit our employees, which could negatively impact our level of expertise and our ability to execute our business plan. For additional information regarding our competition, see the section of this prospectus captioned "Business—Competition."

The successful commercialization of our product candidates will depend in part on the extent to which governmental authorities, private health insurers, and other third-party payors provide coverage, adequate reimbursement levels and implement pricing policies favorable for our product candidates. Failure to obtain or maintain coverage and adequate reimbursement for our product candidates, if approved, could limit our ability to market those products and decrease our ability to generate revenue.

The availability of coverage and adequacy of reimbursement by managed care plans, governmental healthcare programs, such as Medicare and Medicaid, private health insurers and other third-party payors are essential for most patients to be able to afford medical services and pharmaceutical products such as our product candidates that receive FDA approval. Our ability to achieve acceptable levels of coverage and reimbursement for our products or procedures using our products by third-party payors will have an effect on our ability to successfully commercialize our product candidates. Obtaining coverage and adequate reimbursement for our products may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. Separate reimbursement for the product itself or the treatment or procedure in which our product is used may not be available. A decision by a third-party payor not to cover or separately reimburse for our products or procedures using our products, could reduce physician utilization of our products once approved. Assuming there is coverage for our product candidates, or procedures using our product candidates by a third-party payor, the resulting reimbursement payment

rates may not be adequate or may require co-payments that patients find unacceptably high. We cannot be sure that coverage and reimbursement in the United States, the European Union or elsewhere will be available for our product candidates or procedures using our product candidates, or any product that we may develop, and any reimbursement that may become available may not be adequate or may be decreased or eliminated in the future.

Third-party payors increasingly are challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs or biologics when an equivalent generic drug, biosimilar or a less expensive therapy is available. It is possible that a third-party payor may consider our product candidates as substitutable and only offer to reimburse patients for the less expensive product. Even if we show improved efficacy or improved convenience of administration with our product candidates, pricing of existing third-party therapeutics may limit the amount we will be able to charge for our product candidates. These third-party payors may deny or revoke the reimbursement status of our product candidates, if approved, or establish prices for our product candidates at levels that are too low to enable us to realize an appropriate return on our investment. If reimbursement is not available or is available only at limited levels, we may not be able to successfully commercialize our product candidates, and may not be able to obtain a satisfactory financial return on our product candidates.

There is significant uncertainty related to the insurance coverage and reimbursement of newly-approved products, especially novel products like our immunotherapy product candidates. No regulatory authority has granted approval for a tumor-specific cancer immunotherapy based on a vaccine approach, and there is no model for reimbursement of this type of product. The Medicare and Medicaid programs increasingly are used as models in the United States for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs and biologics. Some third-party payors may require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers who use such therapies. We cannot predict at this time what third-party payors will decide with respect to the coverage and reimbursement for our product candidates.

No uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that may require us to provide scientific and clinical support for the use of our product candidates to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases on short notice, and we believe that changes in these rules and regulations are likely.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe and other countries have and will continue to put pressure on the pricing and usage of our product candidates. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. Other countries allow companies to fix their own prices for medical products, but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our product candidates. Accordingly, in markets outside the United States, the reimbursement for our product candidates may be reduced compared with the United States and may be insufficient to generate commercially-reasonable revenue and profits.

Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the

level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for our product candidates. We expect to experience pricing pressures in connection with the sale of our product candidates due to the trend toward managed health care, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and biologics and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products.

If we are unable to support demand for our existing or future services, including ensuring that we have adequate capacity to meet increased demand, or we are unable to successfully manage the evolution of our EDGE platform, our business could suffer.

As the demand for our personalized immunotherapy candidate increases with our clinical trial needs, we will need to continue to increase our workflow capacity for sample intake and general process improvements, expand our internal quality assurance program, and extend our EDGE platform based on additional tumor data collected from our clinical trials at a larger scale within expected turnaround times. We will need additional certified laboratory scientists and technicians and other scientific and technical personnel to process higher volumes of tumor biopsies. Portions of our process are not automated and will require additional personnel to scale. We will also need to purchase additional equipment, some of which can take several months or more to procure, set up, and validate, and increase our software and computing capacity to meet increased volume. There is no assurance that any of these increases in scale, expansion of personnel, equipment, software and computing capacities, or process enhancements will be successfully implemented, or that we will have adequate space in our laboratory facilities to accommodate such required expansion.

As we progress into clinical development and expand our manufacturing capabilities, we will need to incorporate new equipment, implement new technology systems and laboratory processes, and hire new personnel with different qualifications. Failure to manage this growth or transition could result in turnaround time delays, higher service costs, declining service quality, deteriorating customer service, and slower responses to competitive challenges. A failure in any one of these areas could make it difficult for us to meet market expectations for our services, and could damage our reputation and the prospects for our business.

We currently have no sales organization. If we are unable to establish sales capabilities on our own or through third parties, we may not be able to market and sell our product candidates effectively in the United States and foreign jurisdictions, if approved, or generate product revenue.

We currently do not have a marketing or sales organization. In order to commercialize our product candidates, if approved, in the United States and foreign jurisdictions, we must build our marketing, sales, distribution, managerial and other non-technical capabilities or make arrangements with third parties to perform these services, and we may not be successful in doing so. If any of our product candidates receive regulatory approval, we expect to establish a sales organization with technical expertise and supporting distribution capabilities to commercialize each such product candidate, which will be expensive and time consuming. We have no prior experience in the marketing, sale and distribution of pharmaceutical products and there are significant risks involved in building and managing a sales organization, including our ability to hire, retain, and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. We may choose to collaborate with third parties that have direct sales forces and established distribution systems, either to augment our own sales force and

distribution systems or in lieu of our own sales force and distribution systems. If we are unable to enter into such arrangements on acceptable terms or at all, we may not be able to successfully commercialize our product candidates. If we are not successful in commercializing our product candidates or any future product candidates, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses.

We will need to increase the size of our organization, and we may experience difficulties in managing growth.

As of July 31, 2018, we had 99 full-time employees. We will need to continue to expand our managerial, operational, finance and other resources in order to manage our operations and clinical trials, continue our development activities and commercialize our lead product candidate or any future product candidates. Our management and personnel, systems and facilities currently in place may not be adequate to support this future growth. Our need to effectively execute our growth strategy requires that we:

- manage our preclinical studies and clinical trials effectively;
- identify, recruit, retain, incentivize and integrate additional employees, including sales personnel;
- manage our internal development and operational efforts effectively while carrying out our contractual obligations to third parties; and
- continue to improve our operational, financial and management controls, reports systems and procedures.

If we fail to attract and retain senior management and key scientific personnel, our business may be materially and adversely affected.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel. We are highly dependent upon our senior management, particularly our President and Chief Executive Officer, as well as our senior scientists and other members of our senior management team. The loss of services of any of these individuals could delay or prevent the successful development of our products, initiation or completion of our planned clinical trials or the commercialization of our lead product candidate or any future product candidates.

Competition for qualified personnel in the biotechnology and biopharmaceutical fields is intense due to the limited number of individuals who possess the skills and experience required by our industry. We will need to hire additional personnel as we expand our clinical development and if we initiate commercial activities. We may not be able to attract and retain quality personnel on acceptable terms, or at all. In addition, to the extent we hire personnel from competitors, we may be subject to allegations that they have been improperly solicited or that they have divulged proprietary or other confidential information, or that their former employers own their research output.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our current or future product candidates.

We face an inherent risk of product liability as a result of the planned clinical testing of our product candidates and will face an even greater risk if we commercialize any products. For example, we may be sued if any product we develop allegedly causes injury or is found to be otherwise unsuitable during product testing, manufacturing, marketing or sale. Any such product liability claims

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may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability, and a breach of warranty. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our current or future product candidates;
- injury to our reputation;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- substantial monetary awards to trial participants or patients;
- regulatory investigations, product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue; and
- the inability to commercialize our current or any future product candidates.

Our inability to obtain and maintain sufficient product liability insurance at an acceptable cost and scope of coverage to protect against potential product liability claims could prevent or inhibit the commercialization of our current or any future product candidates we develop. We currently carry product liability insurance covering our clinical trials in the amount of \$10 million in the aggregate. Although we maintain such insurance, any claim that may be brought against us could result in a court judgment or settlement in an amount that is not covered, in whole or in part, by our insurance or that is in excess of the limits of our insurance coverage. Our insurance policies also have various exclusions and deductibles, and we may be subject to a product liability claim for which we have no coverage. We will have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient funds to pay such amounts. Moreover, in the future, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses. If and when we obtain approval for marketing any of our product candidates, we intend to expand our insurance coverage to include the sale of such product candidate; however, we may be unable to obtain this liability insurance on commercially reasonable terms or at all.

Any collaboration arrangements that we may enter into in the future may not be successful, which could adversely affect our ability to develop and commercialize our product candidates.

In the future, we may seek to enter into collaboration arrangements for the development or commercialization of certain of our product candidates depending on the merits of retaining commercialization rights for ourselves as compared to entering into collaboration arrangements. To the extent that we decide to enter into collaboration agreements in the future, we may face significant competition in seeking appropriate collaborators. Moreover, collaboration arrangements are complex and time-consuming to negotiate, document, implement and maintain and challenging to manage. We may not be successful in our efforts to prudently manage our existing collaborations or to enter new ones should we choose to do so. The terms of new collaborations or other arrangements that we may establish may not be favorable to us.

The success of our collaboration arrangements will depend heavily on the efforts and activities of our collaborators. Collaborations are subject to numerous risks, which may include risks that:

- collaborators have significant discretion in determining the efforts and resources that they will apply to collaborations;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in their strategic focus due to their acquisition of competitive products or their internal development of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial, abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates;
- a collaborator with marketing, manufacturing and distribution rights to one or more products may not commit sufficient resources to or otherwise not perform satisfactorily in carrying out these activities;
- we could grant exclusive rights to our collaborators that would prevent us from collaborating with others;
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and a collaborator that causes the delay or termination of the research, development or commercialization of our current or future product candidates or that results in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated, and, if terminated, this may result in a need for additional capital to pursue further development or commercialization of the applicable current or future product candidates;
- collaborators may own or co-own intellectual property covering products that result from our collaboration with them, and in such cases, we would not have the exclusive right to develop or commercialize such intellectual property;
- disputes may arise with respect to the ownership of any intellectual property developed pursuant to our collaborations; and
- a collaborator's sales and marketing activities or other operations may not be in compliance with applicable laws resulting in civil or criminal proceedings.

If we engage in future acquisitions or strategic partnerships, this may increase our capital requirements, dilute our stockholders, cause us to incur debt or assume contingent liabilities, and subject us to other risks.

We may evaluate various acquisitions and strategic partnerships, including licensing or acquiring complementary products, intellectual property rights, technologies, or businesses. Any potential acquisition or strategic partnership may entail numerous risks, including:

- increased operating expenses and cash requirements;

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- the assumption of additional indebtedness or contingent liabilities;
- the issuance of our equity securities;
- assimilation of operations, intellectual property and products of an acquired company, including difficulties associated with integrating new personnel;
- the diversion of our management's attention from our existing product programs and initiatives in pursuing such a strategic merger or acquisition;
- retention of key employees, the loss of key personnel, and uncertainties in our ability to maintain key business relationships;
- risks and uncertainties associated with the other party to such a transaction, including the prospects of that party and their existing products or product candidates and regulatory approvals; and
- our inability to generate revenue from acquired technology and/or products sufficient to meet our objectives in undertaking the acquisition or even to offset the associated acquisition and maintenance costs.

In addition, if we undertake acquisitions, we may issue dilutive securities, assume or incur debt obligations, incur large one-time expenses and acquire intangible assets that could result in significant future amortization expense. Moreover, we may not be able to locate suitable acquisition opportunities and this inability could impair our ability to grow or obtain access to technology or products that may be important to the development of our business.

We or the third parties upon whom we depend may be adversely affected by earthquakes or other natural disasters and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Our corporate headquarters and certain of our other facilities, including our manufacturing facility, are located in the San Francisco Bay Area, which in the past has experienced both severe earthquakes and wildfires. We do not carry earthquake insurance. Earthquakes, wildfires or other natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects.

If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters or other facilities, that damaged critical infrastructure, such as our enterprise financial systems or manufacturing resource planning and enterprise quality systems, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible, for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place currently are limited and are unlikely to prove adequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which, particularly when taken together with our lack of earthquake insurance, could have a material adverse effect on our business.

Furthermore, integral parties in our supply chain are similarly vulnerable to natural disasters or other sudden, unforeseen and severe adverse events. If such an event were to affect our supply chain, it could have a material adverse effect on our business.

We depend on our information technology systems, and any failure of these systems could harm our business. Security breaches, loss of data, and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business, results of operations and financial condition.

We collect and maintain information in digital form that is necessary to conduct our business, and we are increasingly dependent on information technology systems and infrastructure to operate our business, including our laboratory information management system and our EDGE platform. In the ordinary course of our business, we collect, store and transmit large amounts of confidential information, including intellectual property, proprietary business information and personal information. It is critical that we do so in a secure manner to maintain the confidentiality and integrity of such confidential information. We have established physical, electronic and organizational measures to safeguard and secure our systems to prevent a data compromise, and rely on commercially available systems, software, tools, and monitoring to provide security for our information technology systems and the processing, transmission and storage of digital information. We have also outsourced elements of our information technology infrastructure, and as a result a number of third-party vendors may or could have access to our confidential information. Our internal information technology systems and infrastructure, and those of our current and any future collaborators, contractors and consultants and other third parties on which we rely, are vulnerable to damage from computer viruses, malware, natural disasters, terrorism, war, telecommunication and electrical failures, cyber-attacks or cyber-intrusions over the Internet, attachments to emails, persons inside our organization, or persons with access to systems inside our organization.

The risk of a security breach or disruption or data loss, 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. In addition, the prevalent use of mobile devices that access confidential information increases the risk of data security breaches, which could lead to the loss of confidential information or other intellectual property. The costs to us to mitigate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and while we have implemented security measures to protect our data security and information technology systems, our efforts to address these problems may not be successful, and these problems could result in unexpected interruptions, delays, cessation of service and other harm to our business and our competitive position. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our product development programs. For example, the loss of clinical trial data from completed or ongoing or planned clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Moreover, if a computer security breach affects our systems or results in the unauthorized release of personally identifiable information, our reputation could be materially damaged. In addition, such a breach may require notification to governmental agencies, the media or individuals pursuant to various federal and state privacy and security laws, if applicable, including the Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Clinical Health Act of 2009, or HITECH, and its implementing rules and regulations, as well as regulations promulgated by the Federal Trade Commission and state breach notification laws. We would also be exposed to a risk of loss or litigation and potential liability, which could materially adversely affect our business, results of operations and financial condition.

Our employees and independent contractors, including principal investigators, consultants, commercial collaborators, service providers and other vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have an adverse effect on our results of operations.

We are exposed to the risk that our employees and independent contractors, including principal investigators, consultants, any future commercial collaborators, service providers and other vendors may engage in misconduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or other unauthorized activities that violate the laws and regulations of the FDA and other similar regulatory bodies, including those laws that require the reporting of true, complete and accurate information to such regulatory bodies; manufacturing standards; U.S. federal and state healthcare fraud and abuse, data privacy laws and other similar non-U.S. laws; or 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 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, disgorgement, possible exclusion from participation in Medicare, Medicaid and other U.S. federal healthcare programs or healthcare programs in other jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, individual imprisonment, other sanctions, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

Our business involves the use of hazardous materials and we and our third-party manufacturers and suppliers must comply with environmental laws and regulations, which can be expensive and restrict how we do business.

Our research and development activities and our third-party manufacturers' and suppliers' activities involve the controlled storage, use and disposal of hazardous materials owned by us, including the components of our product and product candidates and other hazardous compounds. We and any third-party manufacturers and suppliers we engage are subject to numerous federal, state and local environmental, health and safety laws, regulations and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment, and disposal of hazardous and regulated materials and wastes; the emission and discharge of hazardous materials into the ground, air and water; and employee health and safety. Our operations involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. Our operations also produce hazardous waste. In some cases, these hazardous materials and various wastes resulting from their use are stored at our and our manufacturers' facilities pending their use and disposal. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination, which could cause an interruption of our commercialization efforts, research and development efforts and business operations, environmental damage resulting in costly clean-up and liabilities under applicable laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products.

Although we believe that the safety procedures utilized by our third-party manufacturers for handling and disposing of these materials generally comply with the standards prescribed by these laws and regulations, we cannot guarantee that this is the case or eliminate the risk of accidental contamination or injury from these materials. Under certain environmental laws, we could be held responsible for costs relating to any contamination at our current or past facilities and at third-party facilities. In such an event, we may be held liable for any resulting damages and such liability could exceed our resources and state or federal or other applicable authorities may curtail our use of certain materials and/or interrupt our business operations. Furthermore, environmental laws and regulations are complex, change frequently and have tended to become more stringent. We cannot predict the impact of such changes and cannot be certain of our future compliance.

Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research, product development and manufacturing efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes. 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 carry specific biological or hazardous waste insurance coverage, and our property, casualty, and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals could be suspended, which could have a material adverse effect on our business, results of operations and financial condition.

Risks Related to Intellectual Property

Our success depends on our ability to protect our intellectual property and our proprietary technologies.

Our commercial success depends in part on our ability to obtain and maintain patent protection and trade secret protection for our product candidates, proprietary technologies and their uses as well as our ability to operate without infringing upon the proprietary rights of others. We generally seek to protect our proprietary position by filing patent applications in the United States and abroad related to our product candidates, proprietary technologies and their uses that are important to our business. Our patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless, and until, patents issues from such applications, and then only to the extent the issued claims cover the technology. There can be no assurance that our patent applications or those of our licensors will result in additional patents being issued or that issued patents will afford sufficient protection against competitors with similar technology, nor can there be any assurance that the patents issued will not be infringed, designed around or invalidated by third parties. Even issued patents may later be found invalid or unenforceable or may be modified or revoked in proceedings instituted by third parties before various patent offices or in courts. The degree of future protection for our proprietary rights is uncertain. Only limited protection may be available and may not adequately protect our rights or permit us to gain or keep any competitive advantage. If we do not adequately protect our intellectual property and proprietary technology, competitors may be able to use our product candidates and proprietary technologies and erode or negate any competitive advantage we may have, which could have a material adverse effect on our financial condition and results of operations.

We have applied, and we intend to continue applying, for patents covering aspects of our product candidates, proprietary technologies and their uses that we deem appropriate. However, we may not be able to apply for patents on certain aspects of our current or future product candidates, proprietary

technologies and their uses in a timely fashion, at a reasonable cost, in all jurisdictions, or at all, and any potential patent coverage we obtain may not be sufficient to prevent substantial competition. As of July 31, 2018, our solely owned patent portfolio includes 21 pending U.S. patent applications and 25 pending foreign patent applications and we have received a notice of issuance for our pending U.S. patent application relating to the use of a predictive model to identify neoantigens, particularly where the predictive model was trained using mass spectrometry data. We cannot be certain that the claims in any of our patent applications will be considered patentable by the United States Patent and Trademark Office, or USPTO, courts in the United States or by the patent offices and courts in foreign countries, nor can we be certain that the claims in our issued patents will not be found invalid or unenforceable if challenged.

The patent application process is subject to numerous risks and uncertainties, and there can be no assurance that we or any of our actual or potential future collaborators will be successful in protecting our product candidates, proprietary technologies and their uses by obtaining and defending patents. These risks and uncertainties include the following:

- the USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process, the noncompliance with which can result in abandonment or lapse of a patent or patent application, and partial or complete loss of patent rights in the relevant jurisdiction;
- patent applications may not result in any patents being issued;
- patents that may be issued or in-licensed may be challenged, invalidated, modified, revoked, circumvented, found to be unenforceable or otherwise may not provide any competitive advantage;
- our competitors, many of whom have substantially greater resources than we do and many of whom have made significant investments in competing technologies, may seek or may have already obtained patents that will limit, interfere with or eliminate our ability to make, use and sell our potential product candidates;
- other parties may have designed around our claims or developed technologies that may be related or competitive to our platform, may have filed or may file patent applications and may have received or may receive patents that overlap or conflict with our patent applications, either by claiming the same methods or devices or by claiming subject matter that could dominate our patent position;
- any successful opposition to any patents owned by or licensed to us could deprive us of rights necessary for the practice of our technologies or the successful commercialization of any products or product candidates that we may develop;
- because patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we or our licensors were the first to file any patent application related to our product candidates, proprietary technologies and their uses;
- an interference proceeding can be provoked by a third party or instituted by the USPTO to determine who was the first to invent any of the subject matter covered by the patent claims of our applications for any application with an effective filing date before March 16, 2013;
- there may be significant pressure on the U.S. government and international governmental bodies to limit the scope of patent protection both inside and outside the United States for disease treatments that prove successful, as a matter of public policy regarding worldwide health concerns; and
- countries other than the United States may have patent laws less favorable to patentees than those upheld by U.S. courts, allowing foreign competitors a better opportunity to create, develop and market competing product candidates.

The patent position of biopharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. Moreover, the patent prosecution process is also expensive and time-consuming, and we may not be able to file and prosecute 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 before it is too late to obtain patent protection. Although we enter into non-disclosure and confidentiality agreements with parties who have access to 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 such agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our patents, if issued, or the patent rights that we license from others, may be challenged in the courts or patent offices in the United States and abroad. Once granted, patents may remain open to opposition, interference, re-examination, post-grant review, *inter partes* review, nullification or derivation action in court or before patent offices or similar proceedings for a given period after allowance or grant, during which time third parties can raise objections against such initial grant. Such challenges may result in loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, which could limit our ability to stop others from using or commercializing similar or identical products, or limit the duration of the patent protection of our products and product candidates. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our intellectual property may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

Our ability to enforce our patent rights depends on our ability to detect infringement. It may be difficult to detect infringers who do not advertise the components or methods that are used in connection with their products and services. Moreover, it may be difficult or impossible to obtain evidence of infringement in a competitor's or potential competitor's product or service. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded if we were to prevail may not be commercially meaningful.

In addition, proceedings to enforce or defend our patents could put our patents at risk of being invalidated, held unenforceable or interpreted narrowly. Such proceedings could also provoke third parties to assert claims against us, including that some or all of the claims in one or more of our patents are invalid or otherwise unenforceable. If any of our patents covering our products are invalidated or found unenforceable, or if a court found that valid, enforceable patents held by third parties covered one or more of our products, our competitive position could be harmed or we could be required to incur significant expenses to enforce or defend our rights. If we initiate lawsuits to protect or enforce our patents, or litigate against third party claims, such proceedings would be expensive and would divert the attention of our management and technical personnel.

The degree of future protection for our proprietary rights is uncertain, and we cannot ensure that:

- any of our patents, or any of our pending patent applications, if issued, or those of our licensors, will include claims having a scope sufficient to protect our products;
- any of our pending patent applications or those of our licensors may issue as patents;
- others will not or may not be able to make, use, offer to sell, or sell products that are the same as or similar to our own but that are not covered by the claims of the patents that we own or license;

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- we will be able to successfully commercialize our products on a substantial scale, if approved, before the relevant patents that we own or license expire;
- we were the first to make the inventions covered by each of the patents and pending patent applications that we own or license;
- we or our licensors were the first to file patent applications for these inventions;
- others will not develop similar or alternative technologies that do not infringe the patents we own or license;
- any of the patents we own or license will be found to ultimately be valid and enforceable;
- any patents issued to us or our licensors will provide a basis for an exclusive market for our commercially viable products or will provide us with any competitive advantages;
- a third party may not challenge the patents we own or license and, if challenged, a court would hold that such patents are valid, enforceable and infringed;
- we may develop or in-license additional proprietary technologies that are patentable;
- the patents of others will not have an adverse effect on our business;
- our competitors do not conduct research and development activities in countries where we do not have enforceable patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we will develop additional proprietary technologies or products that are separately patentable; or
- our commercial activities or products will not infringe upon the patents of others.

Where we obtain licenses from or collaborate with third parties, in some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from third parties, or such activities, if controlled by us, may require the input of such third parties. We may also require the cooperation of our licensors and collaborators to enforce any licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. Moreover, if we do obtain necessary licenses, we will likely have obligations under those licenses, and any failure to satisfy those obligations could give our licensor the right to terminate the license. Termination of a necessary license, or expiration of licensed patents or patent applications, could have a material adverse impact on our business.

The lives of our patents may not be sufficient to effectively protect our products and business.

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its first effective non-provisional filing date. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates, proprietary technologies and their uses are obtained, once the patent life has expired, we may be open to competition. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. If we do not have sufficient patent life to protect our product candidates, proprietary technologies and their uses, our business and results of operations will be adversely affected.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

We rely on the protection of our trade secrets, including unpatented know-how, technology and other proprietary information. We have taken steps to protect our trade secrets and unpatented know-how, including entering into confidentiality agreements with third parties, and confidential information and inventions agreements with employees, consultants and advisors. In addition to contractual measures, we try to protect the confidential nature of our proprietary information using commonly accepted physical and technological security measures. Despite these efforts, we cannot provide any assurances that all such agreements have been duly executed, and any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. In addition, such security measures may not provide adequate protection for our proprietary information, for example, in the case of misappropriation of a trade secret by an employee, consultant, customer or third party with authorized access. Our security measures may not prevent an employee, consultant or customer from misappropriating our trade secrets and providing them to a competitor, and recourse we take against such misconduct may not provide an adequate remedy to protect our interests fully. Monitoring unauthorized uses and disclosures is difficult, and we do not know whether the steps we have taken to protect our proprietary technologies will be effective. Unauthorized parties may also attempt to copy or reverse engineer certain aspects of our products that we consider proprietary. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time-consuming, and the outcome is unpredictable. Even though we use commonly accepted security measures, the criteria for protection of trade secrets can vary among different jurisdictions.

Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. Moreover, third parties may still obtain this information or may come upon this or similar information independently, and we would have no right to prevent them from using that technology or information to compete with us. Trade secrets will over time be disseminated within the industry through independent development, the publication of journal articles and the movement of personnel skilled in the art from company to company or academic to industry scientific positions. Though our agreements with third parties typically restrict the ability of our advisors, employees, collaborators, licensors, suppliers, third-party contractors and consultants to publish data potentially relating to our trade secrets, our agreements may contain certain limited publication rights. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position. Because from time to time we expect to rely on third parties in the development, manufacture, and distribution of our products and provision of our services, we must, at times, share trade secrets with them. Despite employing the contractual and other security precautions described above, the need to share trade secrets increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. If any of these events occurs or if we otherwise lose protection for our trade secrets, the value of this information may be greatly reduced and our competitive position would be harmed. If we do not apply for patent protection prior to such publication or if we cannot otherwise maintain the confidentiality of our proprietary technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information may be jeopardized.

Our rights to develop and commercialize our product candidates are subject in part to the terms and conditions of licenses granted to us by other companies. The patent protection, prosecution and enforcement for some of our product candidates may be dependent on third parties.

We currently are reliant upon licenses of certain patent rights and proprietary technology from third parties that is important or necessary to the development of our technology and products, including technology related to our product candidates. For example, we rely on our license agreement with Arbutus Biopharma Corporation for certain lipid nanoparticle-based delivery technologies. This and other licenses we may enter into in the future may not provide adequate rights to use such intellectual property and technology in all relevant fields of use or in all territories in which we may wish to develop or commercialize our technology and products in the future. As a result, we may not be able to develop and commercialize our technology and products in fields of use and territories for which we are not granted rights pursuant to such licenses.

Licenses to additional third-party technology that may be required for our development programs may not be available in the future or may not be available on commercially reasonable terms, which could have a material adverse effect on our business and financial condition.

In some circumstances, we may not have the right to control the preparation, filing, prosecution and enforcement of patent applications, or to maintain the patents, covering technology that we license from third parties. In addition, some of our agreements with our licensors require us to obtain consent from the licensor before we can enforce patent rights, and our licensor may withhold such consent or may not provide it on a timely basis. Therefore, we cannot be certain that our licensors or collaborators will prosecute, maintain, enforce and defend such intellectual property rights in a manner consistent with the best interests of our business, including by taking reasonable measures to protect the confidentiality of know-how and trade secrets, or by paying all applicable prosecution and maintenance fees related to intellectual property registrations for any of our product candidates. We also cannot be certain that our licensors have drafted or prosecuted the patents and patent applications licensed to us in compliance with applicable laws and regulations, which may affect the validity and enforceability of such patents or any patents that may issue from such applications. If they fail to do so, this could cause us to lose rights in any applicable intellectual property that we in-license, and as a result our ability to develop and commercialize products or product candidates may be adversely affected and we may be unable to prevent competitors from making, using and selling competing products.

Our current licenses, and our future licenses likely will, impose various royalty payments, milestones, and other obligations on us. If we fail to comply with any of these obligations, we may be required to pay damages and the licensor may have the right to terminate the license. Termination by the licensor would cause us to lose valuable rights, and could prevent us from developing and commercializing our product candidates and proprietary technologies. Our business would suffer if any current or future licenses terminate, if the licensors fail to abide by the terms of the license, if the licensors fail to enforce licensed patents against infringing third parties, if the licensed patents or other rights are found to be invalid or unenforceable, or if we are unable to enter into necessary licenses on acceptable terms. Furthermore, if any current or future licenses terminate, or if the underlying patents fail to provide the intended exclusivity, competitors or other third parties may gain the freedom to seek regulatory approval of, and to market, products identical to ours. Moreover, our licensors may own or control intellectual property that has not been licensed to us and, as a result, we may be subject to claims, regardless of their merit, that we are infringing or otherwise violating the licensor's rights. In addition, while we cannot currently determine the amount of the royalty obligations we would be required to pay on sales of future products, if any, the amounts may be significant. The amount of our future royalty obligations will depend on the technology and intellectual property we use in products that we successfully develop and commercialize, if any. Therefore, even if we successfully develop and commercialize products, we may be unable to achieve or maintain profitability.

Litigation or other proceedings or third-party claims of intellectual property infringement could require us to spend significant time and money and could prevent us from selling our products.

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties. However, our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Claims by third parties that we infringe their proprietary rights may result in liability for damages or prevent or delay our developmental and commercialization efforts. We cannot assure you that our operations do not, or will not in the future, infringe existing or future patents.

Other entities may have or obtain patents or proprietary rights that could limit our ability to make, use, sell, offer for sale or import our product candidates and future approved products or impair our competitive position. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions, reexaminations, *inter partes* review proceedings and post-grant review proceedings before the USPTO and/or corresponding foreign patent offices. Numerous third-party U.S. and foreign issued patents and pending patent applications exist in the fields in which we are developing product candidates. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates. For example, we are aware of U.S. Serial Nos. 15/187,174 and 14/794,449, expiring in May 2031 (absent any patent term adjustments or extensions), directed to certain methods of identifying and using neoantigens. If a patent issues from such patent applications with claims similar to those that are currently pending, our ability to commercialize GRANITE-001 in the United States may be adversely affected if we do not obtain a license under such patent. In addition, we are aware of and have timely opposed EP Patent 2569633, expiring in May 2031 (absent any patent term adjustments or extensions), directed to certain methods of identifying and using neoantigens. EP Patent 2569633 is currently validated in Great Britain, France, Germany, Netherlands, Italy, Ireland, Spain and Switzerland. Our opposition was filed in the company's name on November 7, 2016 by Vossius & Partner. Four other parties also filed oppositions to the patent within the required timeframe. The European Patent Office has currently issued a Preliminary Opinion. The Preliminary Opinion, issued by the Opposition Division in December 2017, tentatively opines that EP Patent 2569633 at least does not meet the requirements of Article 123(2) of the European Patent Convention, or EPC, and that consequently, the patent would have to be revoked under Article 101(2) of the EPC. If EP Patent 2569633 is ultimately maintained by the Opposition Division with claims similar to those that are currently opposed, our ability to commercialize GRANITE-001 in certain European countries may be adversely affected if we do not obtain a license under the patent.

Furthermore, the scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history and can involve other factors such as expert opinion. Our interpretation of the relevance or the scope of claims in a patent or a pending application may be incorrect, which may negatively impact our ability to market our products. Further, we may incorrectly determine that our technologies, products, or product candidates are not covered by a third party patent or may incorrectly predict whether a third party's pending patent application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our products or product candidates.

As the biotechnology industry expands and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties. Our competitors in both the United States and abroad, many of which have substantially greater resources and have made substantial investments in patent portfolios and competing technologies, may have

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applied for or obtained or may in the future apply for and obtain, patents that will prevent, limit or otherwise interfere with our ability to make, use and sell our product candidates. We do not always conduct independent reviews of pending patent applications of and patents issued to third parties.

Patent applications in the United States and elsewhere are typically published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Certain U.S. applications that will not be filed outside the United States can remain confidential until patents issue. In addition, patent applications in the United States and elsewhere can be pending for many years before issuance, or unintentionally abandoned patents or applications can be revived. Furthermore, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our technologies, our product candidates or the use of our product candidates. As such, there may be applications of others now pending or recently revived patents of which we are unaware. These applications may later result in issued patents, or the revival of previously abandoned patents, that will prevent, limit or otherwise interfere with our ability to make, use or sell our products. Because patent applications are maintained as confidential for a certain period of time, until the relevant application is published we may be unaware of third-party patents that may be infringed by commercialization of GRANITE-001, SLATE-001 or our other product candidates, and cannot be certain that we were the first to file a patent application related to a product candidate or technology. Moreover, because patent applications can take many years to issue, there may be currently-pending patent applications that may later result in issued patents that our product candidates may infringe. In addition, identification of third-party patent rights that may be relevant to our technology is difficult because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. Any claims of patent infringement asserted by third parties would be time consuming and could:

- result in costly litigation;
- divert the time and attention of our technical personnel and management;
- cause development delays;
- prevent us from commercializing GRANITE-001, SLATE-001 or our other product candidates until the asserted patent expires or is held finally invalid or not infringing in a court of law;
- require us to develop non-infringing technology, which may not be possible on a cost-effective basis;
- require us to pay damages to the party whose intellectual property rights we may be found to be infringing, which may include treble damages if we are found to have been willfully infringing such intellectual property;
- require us to pay the attorney's fees and costs of litigation to the party whose intellectual property rights we may be found to be infringing; and/or
- require us to enter into royalty or licensing agreements, which may not be available on commercially reasonable terms, or at all.

Although no third party has asserted a claim of patent infringement against us as of the date of this prospectus, others may hold proprietary rights that could prevent GRANITE-001, SLATE-001 or any future immunotherapy candidates from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin commercial activities relating to our product candidates or processes could subject us to potential liability for damages, including treble damages if we were determined to willfully infringe, and require us to obtain a license to manufacture or market GRANITE-001, SLATE-001 or any future immunotherapy candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. We cannot predict whether we would prevail in

any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. Even if such licenses are available, we could incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins, and the rights may be non-exclusive, which could give our competitors access to the same technology or intellectual property rights licensed to us. In addition, we cannot be certain that we could redesign our product candidates or processes to avoid infringement, if necessary. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent us from developing and commercializing GRANITE-001, SLATE-001 or any future immunotherapy candidates, which could harm our business, financial condition and operating results. In addition, intellectual property litigation, regardless of its outcome, may cause negative publicity and could prohibit us from marketing or otherwise commercializing our product candidates and technology.

If we collaborate with third parties in the development of technology in the future, our collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to litigation or potential liability. Further, collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability. Also, we may be obligated under our agreements with our collaborators, licensors, suppliers and others to indemnify and hold them harmless for damages arising from intellectual property infringement by us.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time consuming, and unsuccessful. Further, our issued patents could be found invalid or unenforceable if challenged in court.

Competitors may infringe our intellectual property rights or those of our licensors. To prevent infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in a patent infringement proceeding, a court may decide that a patent we own or in-license is not valid, is unenforceable and/or is not infringed. If we or any of our potential future collaborators were to initiate legal proceedings against a third party to enforce a patent directed at one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable in whole or in part. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge include an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could include an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution. Third parties may also raise similar claims before the USPTO, even outside the context of litigation. Similar mechanisms for challenging the validity and enforceability of a patent exist in ex-U.S. patent offices and may result in the revocation, cancellation, or amendment of any ex-U.S. patents we hold in the future. The outcome following legal assertions of invalidity and unenforceability is unpredictable, and prior art could render our patents or those of our licensors invalid. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on such product candidate. Such a loss of patent protection would have a material adverse impact on our business.

Interference or derivation proceedings provoked by third parties or brought by us or declared by the USPTO may be necessary to determine the priority of inventions with respect to our patents or patent applications or those of our licensors. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms or at all,

or if a non-exclusive license is offered and our competitors gain access to the same technology. Our defense of litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. In addition, the uncertainties associated with litigation could have a material adverse effect on our ability to raise the funds necessary to continue our clinical trials, continue our research programs, license necessary technology from third parties or enter into development or manufacturing partnerships that would help us bring our product candidates to market.

Even if resolved in our favor, litigation or other legal proceedings relating to our intellectual property rights 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 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. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our ability to compete in the marketplace.

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. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

We may not be successful in obtaining or maintaining necessary rights to our product candidates through acquisitions and in-licenses.

We currently have rights to the intellectual property, through licenses from third parties and under patents that we own, to develop our product candidates. Because our programs may require the use of proprietary rights held by third parties, the growth of our business will depend in part on our ability to acquire, in-license or use these proprietary rights. 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 for our product candidates. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies are also pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These established companies may have a competitive advantage over us due to their size, cash 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.

We have collaborated with U.S. academic institutions and may in the future collaborate with U.S. and foreign academic institutions to accelerate our preclinical research or development under written agreements with these institutions. These institutions may provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the collaboration. Regardless of such option, we may be unable to negotiate a license within the specified timeframe or under terms that are acceptable to us. If we are unable to do so, the institution may offer the intellectual property rights to other parties, potentially blocking our ability to pursue our program.

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 that program and our business and financial condition could suffer.

We may fail to comply with any of our obligations under existing or future agreements pursuant to which we license or have otherwise acquired intellectual property rights or technology, which could result in the loss of rights or technology that are material to our business.

We are party to various agreements that we depend on to operate our business, including intellectual property rights relating to GRANITE-001 and SLATE-001, in particular, our agreement with Arbutus. Our rights to use currently licensed intellectual property or intellectual property to be licensed in the future are subject to the continuation of and our compliance with the terms of these agreements. Disputes may arise regarding our rights to intellectual property licensed to us from a third party, including but not limited to:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- the sublicensing of patent and other rights;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the creation or use of intellectual property by us, alone or with our licensors and collaborators;
- the scope and duration of our payment obligations;
- our rights upon termination of such agreement; and
- the scope and duration of exclusivity obligations of each party to the agreement.

If disputes over intellectual property and other rights that we have licensed or acquired from third parties prevent or impair our ability to maintain our current license agreements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates. If we fail to comply with our obligations under current or future license agreements, these agreements may be terminated or the scope of our rights under them may be reduced and we might be unable to develop, manufacture or market any product that is licensed under these agreements.

We may be subject to claims that we have wrongfully hired an employee from a competitor or that we or our employees have wrongfully used or disclosed alleged confidential information or trade secrets of their former employers.

As is common in the biotechnology and biopharmaceutical industries, in addition to our employees, we engage the services of consultants to assist us in the development of our product candidates. Many of these consultants, and many of our employees, were previously employed at, or may have previously provided or may be currently providing consulting services to, other biotechnology or biopharmaceutical companies including our competitors or potential competitors. Although we try to ensure that our employees and consultants do not use the proprietary information or know-how of others in their work for us, we may become subject to claims that we, our employees or a consultant inadvertently or otherwise used or disclosed trade secrets or other information proprietary to their former employers or their former or current clients. 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, which could adversely affect our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management team.

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

We may also be subject to claims that former employees, collaborators or other third parties have an ownership interest in our patents or other intellectual property. In addition, we may face claims by third parties that our agreements with employees, contractors or consultants obligating them to assign intellectual property to us are ineffective or in conflict with prior or competing contractual obligations of assignment, which could result in ownership disputes regarding intellectual property we have developed or will develop and interfere with our ability to capture the commercial value of such intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to management and other employees.

If we do not obtain patent term extension for our product candidates, our business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of GRANITE-001, SLATE-001 or any future immunotherapy candidates, one or more of our U.S. patents may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, also known as the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. The Hatch-Waxman Act allows a maximum of one patent to be extended per FDA approved product as compensation for the 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 and only those claims covering such approved drug product, a method for using it or a method for manufacturing it may be extended. Patent term extension may also be available in certain foreign countries upon regulatory approval of our product candidates. However, we may not be granted an extension because of, for example, 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. If we are unable to obtain patent term extension or restoration 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, possibly materially.

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 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 trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. We may license our trademarks and trade names to third parties, such as distributors. Though these license agreements may provide guidelines for how our trademarks and trade names may be used, a breach of these agreements or

misuse of our trademarks and tradenames by our licensees may jeopardize our rights in or diminish the goodwill associated with our trademarks and trade names. Our efforts to enforce or protect our proprietary rights related to trademarks, trade names, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely affect our financial condition or results of operations.

Changes in patent law in the U.S. or in other countries could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

Our patent rights may be affected by developments or uncertainty in U.S. or ex-U.S. patent statutes, patent case laws in USPTO rules and regulations or in the rules and regulations of ex-U.S. patent offices. There are a number of recent changes to the U.S. patent laws that may have a significant impact on our ability to protect our technology and enforce our intellectual property rights. For example, on September 16, 2011, the Leahy-Smith America Invents Act, or Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. In particular, under the Leahy-Smith Act, the United States transitioned in March 2013 to a “first to file” system in which the first inventor to file a patent application will be entitled to the patent. Third parties are allowed to submit prior art before the issuance of a patent by the USPTO, and may become involved in post-grant proceedings including opposition, derivation, reexamination, *inter partes* review or interference proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position. This could have a negative impact on some of our intellectual property and could increase uncertainties surrounding obtaining and enforcement or defense of our issued patents. In addition, Congress may pass patent reform legislation that is unfavorable to us. The Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents we might obtain in the future.

Similarly, statutory or judicial changes to the patent laws of other countries may increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents.

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

Filing, prosecuting and defending all current and future patents in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection but enforcement is not as strong as that in the United States. These products may compete with our product candidates, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

The legal systems of many foreign countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights. For example, some foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, some countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents 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 may not prevail in any lawsuits that we initiate, and 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.

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

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process. Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the USPTO and various governmental patent agencies outside of the US in several stages over the lifetime of the patents and/or applications. We employ reputable professionals and rely on such third parties to help us comply with these requirements and effect payment of these fees with respect to the patents and patent applications that we own, and if we license intellectual property we may have to rely upon our licensors to comply with these requirements and effect payment of these fees with respect to any patents and patent applications that we license. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which noncompliance can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

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 personalized cancer immunotherapies that are similar to ours but that are not covered by the claims of the patents that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to make the inventions covered by the issued patents or pending patent applications that we own or have exclusively licensed;
- we or our licensors or future collaborators might not have been the first to file patent applications covering certain of 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 pending patent applications will not lead to issued patents;
- issued patents that we own or have exclusively licensed may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- our competitors 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; and
- the patents of others may have an adverse effect on our business.

Should any of these events occur, they could significantly harm our business, results of operations and prospects.

Risks Related to Government Regulation

Even if we obtain regulatory approval for a product candidate, our products will remain subject to regulatory scrutiny.

If one of our product candidates is approved, it will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, conduct of post-marketing studies, and submission of safety, efficacy, and other post-market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities.

Manufacturers and manufacturers' facilities are required to comply with extensive FDA and comparable foreign regulatory authority requirements, including ensuring that quality control and manufacturing procedures conform to cGMP regulations. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMP and adherence to commitments made in any approved marketing application. Accordingly, we and others with whom we work must continue to expend time, money, and effort in all areas of regulatory compliance, including manufacturing, production, and quality control.

We will have to comply with requirements concerning advertising and promotion for our products. Promotional communications with respect to prescription drugs and biologics are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved label. As such, we may not promote our products "off-label" for indications or uses for which they do not have approval. The holder of an approved application must submit new or supplemental applications and obtain approval for certain changes to the approved product, product labeling, or manufacturing process. We could also be asked to conduct post-marketing clinical studies to verify the safety and efficacy of our products in general or in specific patient subsets. An unsuccessful post-marketing study or failure to complete such a study could result in the withdrawal of marketing approval.

If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, or disagrees with the promotion, marketing or labeling of a product, such regulatory agency may impose restrictions on that product or us, including requiring withdrawal of the product from the market. If we fail to comply with applicable regulatory requirements, a regulatory agency or enforcement authority may, among other things:

- issue warning letters;

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- impose civil or criminal penalties;
- suspend or withdraw regulatory approval;
- suspend any of our clinical studies;
- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our contract manufacturers' facilities; or
- seize or detain products, or require a product recall.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response, and could generate negative publicity. Any failure to comply with ongoing regulatory requirements may significantly and adversely affect our ability to commercialize and generate revenue from our products. If regulatory sanctions are applied or if regulatory approval is withdrawn, the value of our company and our operating results will be adversely affected.

Moreover, the policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the Trump administration may impact our business and industry. Namely, the Trump administration has taken several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, FDA's ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict how these orders will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose restrictions on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. In addition, if we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

We may seek orphan drug designation for certain future product candidates, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug designation, including market exclusivity, which may cause our revenue, if any, to be reduced.

We may pursue orphan drug designation for certain of our future product candidates. Under the Orphan Drug Act, the FDA may designate a drug or biologic product as an orphan drug if it is intended to treat a rare disease or condition, defined as a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. In the European Union, the EMA's Committee for Orphan Medicinal Products, or COMP, grants 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 European Union. Additionally, designation is granted for products intended for the diagnosis, prevention, or treatment of a life-threatening, seriously debilitating or serious and chronic condition when, without incentives, it is unlikely that sales of the drug in the European Union would be sufficient to justify the necessary investment in developing the drug or biological product or where there is no satisfactory method of diagnosis, prevention, or treatment, or, if such a method exists, the medicine must be of significant benefit to those affected by the condition.

In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages, and application fee waivers. In addition, if a product receives the first FDA approval for the indication for which it has orphan designation, the product is entitled to orphan drug exclusivity, which means the FDA may not approve any other application to market the same drug for the same indication for a period of seven years, except in limited circumstances, such as a showing of clinical superiority over the product with orphan exclusivity or where the manufacturer is unable to assure sufficient product quantity the orphan patient population. In the European Union, orphan drug designation entitles a party to financial incentives such as reduction of fees or fee waivers and ten years of market exclusivity following drug or biological product approval. This period may be reduced to six years if the orphan drug designation criteria are no longer met, including where it is shown that the product is sufficiently profitable not to justify maintenance of market exclusivity.

Even if we obtain orphan drug designation, we may not be the first to obtain marketing approval for any particular orphan indication due to the uncertainties associated with developing pharmaceutical products. Further, even if we obtain orphan drug exclusivity for a product candidate, that exclusivity may not effectively protect the product from competition because different drugs with different active moieties can be approved for the same condition. Even after an orphan drug is approved, the FDA or EMA can subsequently approve the same drug with the same active moiety for the same condition if the FDA or EMA concludes that the later drug is clinically superior in that it is safer, more effective, or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug or biologic nor gives the drug or biologic any advantage in the regulatory review or approval process.

Enacted and future healthcare legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our product candidates and may affect the prices we may set.

In the United States, the European Union and other jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to the healthcare system that could affect our future results of operations. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA, was enacted, which substantially changed the way healthcare is financed by both governmental and private payors. Among the provisions of the ACA, those of greatest importance to the pharmaceutical and biotechnology industries include the following:

- an annual, non-deductible fee payable by any entity that manufactures or imports certain branded prescription drugs and biologic agents (other than those designated as orphan drugs), which is apportioned among these entities according to their market share in certain government healthcare programs;
- new requirements to report certain financial arrangements with physicians and teaching hospitals, including reporting “transfers of value” made or distributed to prescribers and other healthcare providers and reporting investment interests held by physicians and their immediate family members;
- 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;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer’s Medicaid rebate liability;

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- a licensure framework for follow on biologic products;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; and
- establishment of a Center for Medicare Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of the ACA, and we expect there will be additional challenges and amendments to the ACA in the future. For example, the Tax Cuts and Jobs Act of 2017 was enacted, which includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the “individual mandate”. Since the enactment of the Tax Cuts and Jobs Act of 2017, there have been additional amendments to certain provisions of the ACA, and we expect the current Trump administration and Congress will likely continue to seek to modify, repeal, or otherwise invalidate all, or certain provisions of, the ACA. It is uncertain the extent to which any such changes may impact our business or financial condition.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, led to 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 2027 unless additional action is taken by Congress. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws or any other similar laws introduced in the future may result in additional reductions in Medicare and other health care funding, which could negatively affect our customers and accordingly, our financial operations.

Moreover, payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, CMS may develop new payment and delivery models, such as bundled payment models. In addition, recently 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 government payor programs, and review the relationship between pricing and manufacturer patient programs. The Trump administration’s budget proposal for fiscal year 2019 contains further drug price control measures that could be enacted during the 2019 budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. Further, the Trump administration released a “Blueprint”, or plan, to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase drug manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products, and reduce the out of pocket costs of drug products paid by consumers. The Department of Health and Human Services, or HHS, has already started the process of soliciting feedback on some of these measures and, at the same time, is immediately implementing others under its existing authority. While some proposed measures will require authorization through additional legislation to become effective, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. We expect that

additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures.

Individual states in the United States have also increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological 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. Legally mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This could reduce the ultimate demand for our product candidates or put pressure on our product pricing.

In the European Union, similar political, economic and regulatory developments may affect our ability to profitably commercialize our product candidates, if approved. In addition to continuing pressure on prices and cost containment measures, legislative developments at the European Union or member state level may result in significant additional requirements or obstacles that may increase our operating costs. The delivery of healthcare in the European Union, including the establishment and operation of health services and the pricing and reimbursement of medicines, is almost exclusively a matter for national, rather than European Union, law and policy. National governments and health service providers have different priorities and approaches to the delivery of health care and the pricing and reimbursement of products in that context. In general, however, the healthcare budgetary constraints in most European Union member states have resulted in restrictions on the pricing and reimbursement of medicines by relevant health service providers. Coupled with ever-increasing European Union and national regulatory burdens on those wishing to develop and market products, this could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to commercialize our product candidates, if approved. In markets outside of the United States and European Union, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action in the United States, the European Union or any other jurisdiction. If we or any third parties we may engage are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we or such third parties are not able to maintain regulatory compliance, our product candidates may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability.

Our business operations and current and future relationships with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers will be subject to applicable healthcare regulatory laws, which could expose us to penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our product candidates, if approved. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration

(including any kickback, bribe, or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under any U.S. federal healthcare program, such as Medicare and Medicaid. 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;

- the U.S. federal civil and criminal false claims and civil monetary penalties laws, including the civil False Claims Act, which prohibit, among other things, including through civil whistleblower or qui tam actions, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. Pharmaceutical manufacturers can cause false claims to be presented to the U.S. federal government by engaging in impermissible marketing practices, such as the off-label promotion of a product for an indication for which it has not received FDA approval. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- HIPAA, which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the healthcare fraud statute implemented under HIPAA or specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by HITECH, and its implementing regulations, which also imposes certain obligations, including mandatory contractual terms, with respect to safeguarding the privacy and security of individually identifiable health information of covered entities subject to the rule, such as health plans, healthcare clearinghouses and certain healthcare providers as well as their business associates, independent contractors of a covered entity that perform certain services involving the use or disclosure of individually identifiable health information on their behalf;
- the FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the U.S. Public Health Service Act, which prohibits, among other things, the introduction into interstate commerce of a biological product unless a biologics license is in effect for that product;
- 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 government information related to certain payments and other transfers of value to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;
- analogous U.S. state laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance

guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; state and local laws requiring the registration of pharmaceutical sales representatives; and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and

- the U.S. Foreign Corrupt Practices Act of 1977, as amended, which prohibits, among other things, U.S. companies and their employees and agents from authorizing, promising, offering, or providing, directly or indirectly, corrupt or improper payments or anything else of value to foreign government officials, employees of public international organizations and foreign government owned or affiliated entities, candidates for foreign political office, and foreign political parties or officials thereof;
- similar healthcare laws and regulations in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers.

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 civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. 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 imprisonment, which could affect our ability to operate our business. Further, defending against any such actions can be costly, time-consuming and may require significant 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.

Risks Related to Our Common Stock and This Offering

Our stock price may be volatile and you may not be able to resell shares of our common stock at or above the price you paid.

The trading price of our common stock following this offering could be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include those discussed in this “Risk Factors” section of this prospectus and others such as:

- results from, and any delays in, our clinical trials for GRANITE-001, SLATE-001 or any other future clinical development programs, including public misperception of the results of our trials;
- announcements by academic or other third parties challenging the fundamental premises underlying our approach to treating cancer and/or biopharmaceutical product development;
- announcements of regulatory approval or disapproval of our current or any future product candidates;

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- failure or discontinuation of any of our research and development programs;
- manufacturing setbacks or delays of or issues with the supply of the materials for our personalized immunotherapy candidate;
- announcements relating to future licensing, collaboration or development agreements;
- delays in the commercialization of our current or any future product candidates;
- public misperception regarding the use of our therapies;
- acquisitions and sales of new products, technologies or businesses;
- quarterly variations in our results of operations or those of our future competitors;
- changes in earnings estimates or recommendations by securities analysts;
- announcements by us or our competitors of new products, significant contracts, commercial relationships, acquisitions or capital commitments;
- developments with respect to intellectual property rights;
- our commencement of, or involvement in, litigation;
- changes in financial estimates or guidance, including our ability to meet our future revenue and operating profit or loss estimates or guidance;
- any major changes in our board of directors or management;
- new legislation in the United States relating to the sale or pricing of pharmaceuticals;
- FDA or other U.S. or foreign regulatory actions affecting us or our industry;
- product liability claims or other litigation or public concern about the safety of our product candidates;
- market conditions in the biopharmaceutical and biotechnology sectors; and
- general economic conditions in the United States and abroad.

In addition, the stock markets in general, and the markets for biopharmaceutical and biotechnology stocks in particular, have experienced extreme volatility that may have been unrelated to the operating performance of the issuer. These broad market fluctuations may adversely affect the trading price or liquidity of our common stock. In the past, when the market price of a stock has been volatile, holders of that stock have sometimes instituted securities class action litigation against the issuer. If any of our stockholders were to bring such a lawsuit against us, we could incur substantial costs defending the lawsuit and the attention of our management would be diverted from the operation of our business.

An active, liquid and orderly market for our common stock may not develop, and you may not be able to resell your common stock at or above the public offering price.

Prior to this offering, there has been no public market for shares of our common stock, and an active public market for our shares may not develop or be sustained after this offering. We and the representatives of the underwriters will determine the initial public offering price of our common stock through negotiation. This price will not necessarily reflect the price at which investors in the market will be willing to buy and sell our shares following this offering. In addition, an active trading market may not develop following the consummation of this offering or, if it is developed, may not be sustained. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. An inactive market may also impair our ability to raise capital by selling shares and may impair our ability to acquire other businesses, applications, or technologies using our shares as consideration.

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

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. We do not currently have and may never obtain research coverage by securities and industry analysts. If no or few securities or industry analysts commence coverage of us, the trading price for our stock would be negatively impacted. In the event we obtain securities or industry analyst coverage, if any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our stock performance, or if our clinical trials and 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.

We will incur significant costs as a result of operating as a public company, and our management will devote substantial time to new compliance initiatives. We may fail to comply with the rules that apply to public companies, including Section 404 of the Sarbanes-Oxley Act of 2002, which could result in sanctions or other penalties that would harm our business.

We will incur significant legal, accounting and other expenses as a public company, including costs resulting from public company reporting obligations under the Exchange Act and regulations regarding corporate governance practices. The listing requirements of The Nasdaq Global Market and the rules of the Securities and Exchange Commission, or SEC, require that we satisfy certain corporate governance requirements relating to director independence, filing annual and interim reports, stockholder meetings, approvals and voting, soliciting proxies, conflicts of interest and a code of conduct. Our management and other personnel will need to devote a substantial amount of time to ensure that we comply with all of these requirements. Moreover, the reporting requirements, rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. Any changes we make to comply with these obligations may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis, or at all. These reporting requirements, rules and regulations, coupled with the increase in potential litigation exposure associated with being a public company, could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or board committees or to serve as executive officers, or to obtain certain types of insurance, including directors' and officers' insurance, on acceptable terms.

After this offering, we will be subject to Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, and the related rules of the SEC, which generally require our management and independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting. Beginning with the second annual report that we will be required to file with the SEC, Section 404 requires an annual management assessment of the effectiveness of our internal control over financial reporting. However, for so long as we remain an emerging growth company as defined in the JOBS Act, we intend to take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404. Once we are no longer an emerging growth company or, if prior to such date, we opt to no longer take advantage of the applicable exemption, we will be required to include an opinion from our independent registered public accounting firm on the effectiveness of our internal controls over financial reporting. We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of the completion of this offering, (b) in which we have total annual gross revenue of at least \$1.07 billion, or (c) in which we are deemed to be a large

accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds \$700.0 million as of the prior June 30th, and (2) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period.

To date, we have never conducted a review of our internal control for the purpose of providing the reports required by these rules. During the course of our review and testing, we may identify deficiencies and be unable to remediate them before we must provide the required reports. Furthermore, if we have a material weakness in our internal controls over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We or our independent registered public accounting firm may not be able to conclude on an ongoing basis that we have effective internal control over financial reporting, which could harm our operating results, cause investors to lose confidence in our reported financial information and cause the trading price of our stock to fall. In addition, as a public company we will be required to file accurate and timely quarterly and annual reports with the SEC under the Exchange Act. In order to report our results of operations and financial statements on an accurate and timely basis, we will depend on CROs to provide timely and accurate notice of their costs to us. Any failure to report our financial results on an accurate and timely basis could result in sanctions, lawsuits, delisting of our shares from The Nasdaq Global Market or other adverse consequences that would materially harm to our business.

Purchasers in this offering will experience immediate and substantial dilution in the book value of their investment.

The initial public offering price of our common stock is substantially higher than the pro forma net tangible book value per share of our common stock before giving effect to this offering. Accordingly, if you purchase our common stock in this offering, you will incur immediate and substantial dilution of approximately \$ per share, based on an assumed initial public offering price of \$ per share, the midpoint of the estimated price range set forth on the cover of this prospectus, and our pro forma net tangible book value as of June 30, 2018. In addition, following this offering, purchasers in this offering will have contributed approximately % of the total gross consideration paid by stockholders to us to purchase shares of our common stock, through June 30, 2018, but will own only approximately % of the shares of common stock outstanding immediately after this offering. Furthermore, if the underwriters exercise their option to purchase additional shares, or outstanding options and warrants are exercised, you could experience further dilution. For a further description of the dilution that you will experience immediately after this offering, see the section titled "Dilution."

If we sell shares of our common stock in future financings, stockholders may experience immediate dilution and, as a result, our stock price may decline.

We may from time to time issue additional shares of common stock at a discount from the current trading price of our common stock. As a result, our stockholders would experience immediate dilution upon the purchase of any shares of our common stock sold at such discount. In addition, as opportunities present themselves, we may enter into financing or similar arrangements in the future, including the issuance of debt securities, preferred stock or common stock. If we issue common stock or securities convertible into common stock, our common stockholders would experience additional dilution and, as a result, our stock price may decline.

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 as of July 31, 2018, our executive officers, directors, holders of 5.0% or more of our capital stock and their respective affiliates held approximately 79.8% of our outstanding voting stock and, upon the closing of this offering, that same group will hold approximately % of our

outstanding voting stock (assuming no exercise of the underwriters' option to purchase additional shares of common stock and no exercise of outstanding options). Therefore, even after this offering these stockholders will have the ability to influence us through this ownership position. These stockholders may be able to determine all matters requiring stockholder approval. For example, these stockholders may be able to control 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 you may feel are in your best interest as one of our stockholders.

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

If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market after the lock-up and other legal restrictions on resale discussed in this prospectus lapse, the trading price of our common stock could decline. Based upon the number of shares outstanding as of July 31, 2018, upon the closing of this offering, we will have outstanding a total of _____ shares of common stock, assuming no exercise of the underwriters' option to purchase additional shares of common stock and no exercise of outstanding options. Of these shares, approximately _____ shares of our common stock sold in this offering, plus any shares sold upon exercise of the underwriters' option to purchase additional shares, will be freely tradable, without restriction, in the public market immediately following this offering.

The lock-up agreements pertaining to this offering will expire 180 days from the date of this prospectus. After the lock-up agreements expire, as of July 31, 2018, up to approximately 147.5 million additional shares of common stock will be eligible for sale in the public market, approximately 72.8 million of which shares are held by directors, executive officers and other affiliates and will be subject to Rule 144 under the Securities Act of 1933, as amended, or the Securities Act. Goldman Sachs & Co. LLC, Cowen and Company, LLC and Barclays Capital Inc. may, however, in their sole discretion, permit our officers, directors and other stockholders who are subject to these lock-up agreements to sell shares prior to the expiration of the lock-up agreements.

In addition, as of July 31, 2018, approximately 17.1 million shares of common stock that are either subject to outstanding options or reserved for future issuance under our equity incentive plans will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, the lock-up agreements and Rule 144 and Rule 701 under the Securities Act. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

After this offering, the holders of approximately 128.6 million shares of our common stock, or approximately 87.1% of our total outstanding common stock as of July 31, 2018, will be entitled to rights with respect to the registration of their shares under the Securities Act, subject to vesting schedules and to the lock-up agreements described above. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares purchased by affiliates. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our common stock.

We have broad discretion to determine how to use the funds raised in this offering, and may use them in ways that may not enhance our operating results or the price of our common stock.

Our management will have broad discretion over the use of proceeds from this offering, and we could spend the proceeds from this offering in ways our stockholders may not agree with or that do not

yield a favorable return, if at all. We currently expect to use the net proceeds of this offering to fund our planned Phase 1/2 clinical trial of GRANITE-001, continued buildout of our manufacturing facility, internal research and development activities including preclinical and IND-enabling activities for SLATE-001, and for working capital and general corporate purposes. However, our use of these proceeds may differ substantially from our current plans. If we do not invest or apply the proceeds of this offering in ways that improve our operating results, we may fail to achieve expected financial results, which could cause our stock price to decline.

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

We have incurred substantial losses during our history and do not expect to become profitable in the near future, and we may never achieve profitability. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset a portion of future taxable income, if any, until such unused losses expire, if ever. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an “ownership change,” generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders over a three-year period, the corporation’s ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research and development tax credits) to offset its post-change income or taxes may be limited. While we do not believe we have experienced ownership changes in the past, it is possible we have done so, and we may experience ownership changes in the future as a result of this offering and/or subsequent shifts in our stock ownership (some of which shifts are outside our control). As a result, even if we attain profitability, we may be unable to use a material portion of our NOLs and other tax attributes.

Recent U.S. tax legislation and future changes to applicable U.S. tax laws and regulations may have a material adverse effect on our business, financial condition and results of operations.

Changes in laws and policy relating to taxes may have an adverse effect on our business, financial condition and results of operations. For example, the U.S. government recently enacted significant tax reform legislation, and certain provisions of the new law may adversely affect us. Changes include, but are not limited to, a federal corporate income tax rate decrease to 21% for tax years beginning after December 31, 2017, a reduction to the maximum deduction allowed for net operating losses generated in tax years after December 31, 2017, eliminating carrybacks of net operating losses, and providing for indefinite carryforwards for losses generated in tax years after December 31, 2017. The legislation is unclear in many respects and could be subject to potential amendments and technical corrections, and will be subject to interpretations and implementing regulations by the Treasury and Internal Revenue Service, any of which could mitigate or increase certain adverse effects of the legislation. In addition, it is unclear how these U.S. federal income tax changes will affect state and local taxation. Generally, future changes in applicable U.S. tax laws and regulations, or their interpretation and application could have an adverse effect on our business, financial condition and results of operations.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable and may lead to entrenchment of management.

Our amended and restated certificate of incorporation and amended and restated bylaws that will be in effect immediately prior to the consummation of this offering will contain provisions that could delay or prevent changes in control or changes in our management without the consent of our board of directors. These provisions will include the following:

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;

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- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- the ability of our board of directors to authorize the issuance of shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquiror;
- the ability of our board of directors to alter our amended and restated bylaws without obtaining stockholder approval;
- the required approval of at least 66 2/3% of the shares entitled to vote at an election of directors to adopt, amend or repeal our amended and restated bylaws or repeal the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by our chief executive officer or president or by the board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect the acquiror's own slate of directors or otherwise attempting to obtain control of us.

We are also subject to the anti-takeover provisions contained in Section 203 of the Delaware General Corporation Law. Under Section 203, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other exceptions, the board of directors has approved the transaction. For a description of our capital stock, see the section titled "Description of Capital Stock."

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws will provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, our amended and restated bylaws to be effective immediately prior to the completion of this offering and our indemnification agreements that we have entered into with our directors and officers will provide that:

- We will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if 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 registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful.

- We may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law.
- We are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- We will not be obligated pursuant to our amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification.
- The rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons.
- We may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

Our amended and restated certificate of incorporation will provide that the Court of Chancery of the State of Delaware or U.S. federal district courts will be the exclusive forum for substantially all disputes between us and 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 amended and restated certificate of incorporation will provide that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws, any action to interpret, apply, enforce, or determine the validity of our amended and restated certificate of incorporation or amended and restated bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine. Similarly, our amended and restated certificate of incorporation will provide that the U.S. federal district courts are the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision that will be contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

We do not currently intend to pay dividends on our common stock, and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We do not currently intend to pay any cash dividends on our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future. Since we do not intend to pay dividends, your ability to receive a return on your investment will depend on any future appreciation in the market value of our common stock. There is no guarantee that our common stock will appreciate or even maintain the price at which our holders have purchased it.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements concerning our business, operations and financial performance and condition, as well as our plans, objectives and expectations for our business operations and financial performance and condition. Any statements contained herein that are not statements of historical facts may be deemed to be forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “aim,” “anticipate,” “assume,” “believe,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective,” “plan,” “predict,” “potential,” “positioned,” “seek,” “should,” “target,” “will,” “would,” and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- our expectations regarding the potential market size and size of the potential patient populations for GRANITE-001, SLATE-001 and any future product candidates, if approved for commercial use;
- our clinical and regulatory development plans;
- our expectations with regard to our Gritstone EDGE platform, including our ability to utilize the platform to predict the TSNA that will be presented on a patient’s tumor cells and identify shared antigens for other therapeutic classes;
- our expectations with regard to the data to be derived in our planned Phase 1/2 clinical trial, GO-004;
- the timing of commencement of future nonclinical studies and clinical trials and research and development programs;
- our ability to acquire, discover, develop and advance product candidates into, and successfully complete, clinical trials;
- our intentions and our ability to establish collaborations and/or partnerships;
- the timing or likelihood of regulatory filings and approvals for our product candidates;
- our commercialization, marketing and manufacturing capabilities and expectations;
- our intentions with respect to the commercialization of our product candidates;
- 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 platforms, including additional indications for which we may pursue;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates, including the projected terms of patent protection;
- estimates of our expenses, future revenue, capital requirements, our needs for additional financing and our ability to obtain additional capital;
- our use of proceeds from this offering;
- our future financial performance;
- developments and projections relating to our competitors and our industry, including competing therapies and procedures; and
- other risks and uncertainties, including those listed under the caption “Risk Factors.”

These forward-looking statements are based on management’s current expectations, estimates, forecasts and projections about our business and the industry in which we operate and management’s

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beliefs and assumptions and are not guarantees of future performance or development and involve known and unknown risks, uncertainties and other factors that are in some cases beyond our control. As a result, any or all of our forward-looking statements in this prospectus may turn out to be inaccurate. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under “Risk Factors” and elsewhere in this prospectus. Potential investors are urged to consider these factors carefully in evaluating the forward-looking statements. These forward-looking statements speak only as of the date of this prospectus. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future. You should, however, review the factors and risks we describe in the reports we will file from time to time with the SEC after the date of this prospectus. See “Where You Can Find More Information.”

MARKET AND INDUSTRY DATA

This prospectus contains estimates, projections and other information concerning our industry, our business, as well as data regarding market research, estimates and forecasts prepared by our management. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances that are assumed in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources. In some cases, we do not expressly refer to the sources from which this data is derived. In that regard, when we refer to one or more sources of this type of data in any paragraph, you should assume that other data of this type appearing in the same paragraph is derived from the same sources, unless otherwise expressly stated or the context otherwise requires.

USE OF PROCEEDS

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

Each \$1.00 increase (decrease) in the assumed initial public offering price of \$ _____ per share (the midpoint of the range set forth on the cover of this prospectus) would increase (decrease) the net proceeds to us from this offering, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, by approximately \$ _____ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same. We may also increase or decrease the number of shares we are offering. Each increase (decrease) of 1,000,000 in the number of shares we are offering would increase (decrease) the net proceeds to us from this offering, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, by approximately \$ _____ million, assuming the assumed initial public offering price stays the same. We do not expect that a change in the offering price or the number of shares by these amounts would have a material effect on our intended uses of the net proceeds from this offering, although it may impact the amount of time prior to which we may need to seek additional capital.

We currently expect to use our net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, as follows:

- approximately \$ _____ million to \$ _____ million to fund our planned Phase 1/2 clinical trial of GRANITE-001;
- approximately \$ _____ million to \$ _____ million to fund the continued buildout of our manufacturing facility;
- approximately \$ _____ million to \$ _____ million to fund internal research and development activities, including preclinical and IND-enabling activities for SLATE-001; and
- the balance for working capital and general corporate purposes.

We may also use a portion of the remaining net proceeds and our existing cash, cash equivalents and marketable securities to in-license, acquire, or invest in complementary businesses, technologies, products or assets. However, we have no current commitments or obligations to do so.

Due to the uncertainties inherent in the clinical development and regulatory approval process, it is difficult to estimate with certainty the exact amounts of the net proceeds from this offering that may be used for the above purposes. As such, our management will retain broad discretion over the use of the net proceeds from this offering. The amounts and timing of our expenditures will depend upon numerous factors, including: (i) the time and cost necessary to advance GRANITE-001 through our planned Phase 1/2 clinical trial and future clinical trials; (ii) the timing of scaling our manufacturing capabilities and internalizing certain of our manufacturing processes; (iii) the time and cost associated with our research and development activities; and (iv) our ability to obtain regulatory approval for and subsequently commercialize GRANITE-001, SLATE-001 and any other future product candidates.

We believe that our existing cash, cash equivalents and marketable securities, together with the net proceeds from this offering, will be sufficient to fund our planned operations for at least _____ months

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following the date of this offering. After this offering, we will require substantial capital in order to advance GRANITE-001, SLATE-001 and any other future product candidates through pivotal clinical trials, regulatory approval and commercialization. For additional information regarding our potential capital requirements, see “Risk Factors—We will require substantial 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 product development programs, commercialization efforts or other operations.”

Pending the use of the proceeds from this offering, we intend to invest the net proceeds in interest-bearing, investment-grade securities, certificates of deposit or government securities.

DIVIDEND POLICY

We have never declared or paid cash dividends on our capital stock. We intend to retain all available funds and any future earnings, if any, to fund the development and expansion of our business and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination related to dividend policy will be made at the discretion of our board of directors.

CAPITALIZATION

The following table sets forth our cash, cash equivalents and marketable securities and capitalization as of June 30, 2018:

- on an actual basis;
- on a pro forma basis to give effect to: (i) our issuance and sale during July 2018 of 1,058,201 shares of our Series C convertible preferred stock for cash consideration of \$2.0 million; (ii) the automatic conversion of all shares of our convertible preferred stock outstanding at June 30, 2018, together with the shares of Series C convertible preferred stock we issued during July 2018, into an aggregate of 128,623,424 shares of our common stock, which will be effective immediately prior to the consummation of this offering; and (iii) the filing and effectiveness of our amended and restated certificate of incorporation, which will occur immediately prior to the consummation of this offering; and
- on a pro forma as adjusted basis to give further effect to the sale of _____ shares of common stock in this offering at an assumed initial public offering price of \$ _____ per share (the midpoint of the range set forth on the cover of this prospectus), after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this information together with our financial statements and related notes appearing elsewhere in this prospectus and the information set forth under the headings “Selected Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

| | As of June 30, 2018 | | |
|--|--|-----------|-----------------------------|
| | Actual | Pro Forma | Pro Forma As Adjusted(1) |
| | (In thousands, except share and per share data) (unaudited) | | |
| Cash, cash equivalents and marketable securities | \$ 64,490 | \$ 66,490 | \$ _____ |
| Stockholders’ equity: | | | |
| Convertible preferred stock, \$0.0001 par value— 139,228,319 shares authorized, 127,565,223 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted | \$ 165,865 | \$ — | \$ _____ |
| Common stock, \$0.0001 par value—175,250,000 shares authorized, 16,619,601 shares issued and outstanding, actual; 300,000,000 shares authorized, 144,154,824 shares issued and outstanding, pro forma; 300,000,000 shares authorized, _____ shares issued and outstanding, pro forma as adjusted | 2 | 15 | |
| Preferred stock, \$0.0001 par value—no shares authorized, issued and outstanding, actual; 10,000,000 shares authorized, pro forma and pro forma as adjusted; no shares issued and outstanding, pro forma and pro forma as adjusted | — | — | |
| Additional paid-in capital | 3,311 | 171,163 | |
| Accumulated other comprehensive loss | (31) | (31) | |
| Accumulated deficit | (90,475) | (90,475) | |
| Total stockholders’ equity | 78,672 | 80,672 | |
| Total capitalization | \$ 78,672 | \$ 80,672 | \$ _____ |

(1) A \$1.00 increase (decrease) in the assumed initial public offering price of \$ _____ per share (the midpoint of the range set forth on the cover of this prospectus) would increase (decrease) the amount of each of cash,

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cash equivalents and marketable securities, additional paid-in capital, total stockholders' equity and total capitalization by approximately \$, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of shares we are offering. Each increase (decrease) of 1,000,000 shares in the number of shares offered by us would increase (decrease) each of cash, cash equivalents and marketable securities, additional paid-in capital, total stockholders' equity and total capitalization by approximately \$, assuming the assumed initial public offering price of \$ per share (the midpoint of the range set forth on the cover of this prospectus) remains the same, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. The pro forma as adjusted information discussed above is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering determined at pricing.

The outstanding share information in the table above excludes the following:

- 11,507,414 shares of common stock issuable upon the exercise of outstanding stock options as of June 30, 2018 having a weighted-average exercise price of \$0.22 per share;
- 5,580,429 shares of common stock reserved for issuance pursuant to future awards under our 2015 Equity Incentive Plan, as amended, as of June 30, 2018, which will become available for issuance under our 2018 Incentive Award Plan after consummation of this offering;
- 2,322,556 shares of issued and outstanding restricted common stock that were subject to repurchase as of June 30, 2018;
- shares of common stock reserved for issuance pursuant to future awards under our 2018 Incentive Award Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which will become effective on the day prior to the first public trading date of our common stock; and
- shares of common stock reserved for issuance pursuant to future awards under our 2018 Employee Stock Purchase Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which will become effective on the day prior to the first public trading date of our common stock.

DILUTION

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

As of June 30, 2018, we had a historical net tangible book value of \$78.7 million, or \$4.15 per share of common stock. Our net tangible book value represents total tangible assets less total liabilities, all divided by 18,942,157 shares of common stock outstanding on June 30, 2018, which includes 2,322,556 shares of restricted common stock that were subject to repurchase as of June 30, 2018. Our pro forma net tangible book value at June 30, 2018, before giving effect to this offering, was \$ million, or \$ per share of our common stock. Pro forma net tangible book value, before the issuance and sale of shares in this offering, gives effect to:

- our issuance and sale during July 2018 of 1,058,201 shares of our Series C convertible preferred stock for cash consideration of \$2.0 million;
- the automatic conversion of all shares of our convertible preferred stock outstanding at June 30, 2018, together with the shares of Series C convertible preferred stock we issued during July 2018, into an aggregate of 128,623,424 shares of our common stock, which will be effective immediately prior to the consummation of this offering; and
- the filing and effectiveness of our amended and restated certificate of incorporation, which will occur immediately prior to the consummation of this offering.

After giving effect to the sale of shares of common stock in this offering at an assumed initial public offering price of \$ per share (the midpoint of the range set forth on the cover of this prospectus) and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of June 30, 2018 would have been approximately \$ million, or \$ per share. This represents an immediate increase in pro forma as adjusted net tangible book value of \$ per share to existing stockholders and an immediate dilution of \$ per share to new investors. The following table illustrates this per share dilution:

| | |
|---|----------------------|
| Assumed initial public offering price per share | \$ |
| Historical net tangible book value per share as of June 30, 2018 | \$ 4.15 |
| Pro forma decrease in historical net tangible book value per share attributable to the pro forma transactions described in the preceding paragraphs | (3.62) |
| Pro forma net tangible book value per share as of June 30, 2018 | 0.53 |
| Increase in pro forma net tangible book value per share attributable to new investors purchasing shares in this offering | <u> </u> |
| Pro forma as adjusted net tangible book value per share after this offering | <u> </u> |
| Dilution per share to new investors purchasing shares in this offering | <u> </u> \$ |

Each \$1.00 increase (decrease) in the assumed initial public offering price of \$ per share (the midpoint of the range set forth on the cover of this prospectus) would increase (decrease) our pro forma as adjusted net tangible book value as of June 30, 2018 after this offering by approximately \$ million, or approximately \$ per share, and would decrease (increase) dilution to investors in this offering by approximately \$ per share, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of shares we are offering. Assuming the assumed initial public price of \$ per share (the midpoint of the range set forth on the cover of this prospectus) remains the same, after

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deducting the underwriting discounts and commissions and estimated offering expenses payable by us, each increase of 1,000,000 in the number of shares we are offering would increase our pro forma as adjusted net tangible book value as of June 30, 2018 after this offering by approximately \$ million, or approximately \$ per share, and would decrease dilution to investors in this offering by approximately \$ per share, and a decrease of 1,000,000 in the number of shares we are offering would decrease our pro forma as adjusted net tangible book value as of June 30, 2018 after this offering by approximately \$ million, or approximately \$ per share, and would increase dilution to investors in this offering by approximately \$ per share. The pro forma as adjusted information is illustrative only, and we will adjust this information based on the actual initial public offering price and other terms of this offering determined at pricing.

If the underwriters fully exercise their option to purchase additional shares, pro forma as adjusted net tangible book value after this offering would increase to approximately \$ per share, and there would be an immediate dilution of approximately \$ per share to new investors.

To the extent that outstanding options with an exercise price per share that is less than the pro forma as adjusted net tangible book value per share are exercised, new investors will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that 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.

The following table shows, as of June 30, 2018, on a pro forma as adjusted basis, the number of shares of common stock purchased from us, the total consideration paid to us and the average price paid per share by existing stockholders and by new investors purchasing common stock in this offering at an assumed initial public offering price of \$ per share (the midpoint of the range set forth on the cover of this prospectus), before deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us:

| | Shares Purchased | | Total Consideration | | Average Price Per Share |
|--|------------------|---------|-----------------------|---------|-------------------------|
| | Number | Percent | Amount (in thousands) | Percent | |
| Existing stockholders before this offering | 146,507,380 | % | \$ 166,661 | % | \$ 1.14 |
| Investors participating in this offering | | | | | \$ |
| Total | | 100% | \$ | 100% | |

The number of shares of common stock to be outstanding after this offering is based on the number of shares outstanding as of June 30, 2018 and excludes the following:

- 11,507,414 shares of common stock issuable upon the exercise of outstanding stock options as of June 30, 2018 having a weighted-average exercise price of \$0.22 per share;
- 5,580,429 shares of common stock reserved for issuance pursuant to future awards under our 2015 Equity Incentive Plan, as amended, as of June 30, 2018, which will become available for issuance under our 2018 Incentive Award Plan after consummation of this offering;
- shares of common stock reserved for issuance pursuant to future awards under our 2018 Incentive Award Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which will become effective on the day prior to the first public trading date of our common stock; and
- shares of common stock reserved for issuance pursuant to future awards under our 2018 Employee Stock Purchase Plan, as well as any automatic increases in the number of

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shares of our common stock reserved for future issuance under this plan, which will become effective on the day prior to the first public trading date of our common stock.

To the extent any outstanding options are exercised, or we issue additional equity or convertible debt securities in the future, there will be further dilution to new investors.

SELECTED FINANCIAL DATA

The following tables present our selected financial data for the periods and as of the dates indicated. We have derived the following selected statements of operations and comprehensive loss data for the years ended December 31, 2016 and 2017, and the balance sheet data as of December 31, 2016 and 2017, from our audited financial statements and related notes included elsewhere in this prospectus. The selected statement of operations data for the six months ended June 30, 2017 and 2018 and the selected balance sheet data as of June 30, 2018 are derived from our unaudited interim condensed financial statements included elsewhere in this prospectus. The unaudited interim condensed financial statements have been prepared in accordance with generally accepted accounting principles in the United States of America and on the same basis as the audited financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary to present fairly our financial position as of June 30, 2018 and the results of operations for the six months ended June 30, 2017 and 2018. Our historical results are not necessarily indicative of the results that may be expected in the future and results for the six months ended June 30, 2018 are not necessarily indicative of results to be expected for the full year. You should read the financial data below in conjunction with the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our audited financial statements and unaudited interim condensed financial statements and related notes included elsewhere in this prospectus.

| | Year Ended December 31, | | Six Months Ended June 30, | |
|---|---|--------------------|------------------------------|--------------------|
| | 2016 | 2017 | 2017 | 2018 |
| | (unaudited) | | | |
| | (in thousands, except share and per share data) | | | |
| Statements of Operations and Comprehensive Loss | | | | |
| Data: | | | | |
| Operating Expenses: | | | | |
| Research and development | \$ 13,916 | \$ 35,691 | \$ 11,855 | \$ 24,090 |
| General and administrative | 5,064 | 6,072 | 2,840 | 4,852 |
| Total operating expenses | <u>18,980</u> | <u>41,763</u> | <u>14,695</u> | <u>28,942</u> |
| Loss from operations | (18,980) | (41,763) | (14,695) | (28,942) |
| Interest income, net | 230 | 386 | 138 | 94 |
| Net loss | (18,750) | (41,377) | (14,557) | (28,848) |
| Unrealized loss on marketable securities | (2) | (71) | (2) | (31) |
| Other comprehensive loss | <u>\$ (18,752)</u> | <u>\$ (41,448)</u> | <u>\$ (14,559)</u> | <u>\$ (28,879)</u> |
| Net loss per share, basic and diluted(1) | <u>\$ (1.62)</u> | <u>\$ (3.00)</u> | <u>\$ (1.11)</u> | <u>\$ (1.83)</u> |
| Weighted-average number of shares outstanding, basic and diluted(1) | <u>11,540,581</u> | <u>13,793,417</u> | <u>13,156,419</u> | <u>15,772,769</u> |
| Pro forma net loss per share, basic and diluted(1) | | <u>\$ (0.44)</u> | | <u>\$ (0.21)</u> |
| Pro forma weighted-average number of shares outstanding, basic and diluted(1) | | <u>94,529,860</u> | | <u>138,628,706</u> |

- (1) See Notes 2 and 12 to our audited financial statements, and Notes 2 and 10 to our unaudited interim condensed financial statements, included elsewhere in this prospectus for further details on the calculations of our basic and diluted net loss per share, basic and diluted pro forma net loss per share and the weighted-average number of shares used in the computation of the per share amounts.

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| | <u>As of December 31,</u> | | <u>As of June 30,</u> |
|--|---------------------------|-------------|-----------------------|
| | <u>2016</u> | <u>2017</u> | <u>2018</u> |
| | <u>(in thousands)</u> | | |
| Balance Sheets Data: | | | |
| Cash, cash equivalents and marketable securities | \$ 37,507 | \$ 85,953 | \$ 64,490 |
| Working capital(1) | 35,897 | 80,827 | 61,697 |
| Total assets | 46,421 | 117,300 | 95,951 |
| Total liabilities | 4,732 | 20,018 | 17,280 |
| Convertible preferred stock | 61,139 | 156,937 | 165,865 |
| Accumulated deficit | (20,250) | (61,627) | (90,475) |
| Total stockholders' equity | 41,689 | 97,282 | 78,672 |

- (1) We define working capital as current assets less current liabilities. See our audited financial statements and unaudited interim condensed financial statements and related notes included elsewhere in this prospectus for details regarding our current assets and current liabilities.

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 section titled "Selected Financial Data" and our audited financial statements and unaudited interim condensed financial statements and related notes included elsewhere in this prospectus. This discussion and other parts of this prospectus contain forward-looking statements that involve risks and uncertainties, such as our plans, objectives, expectations, intentions and beliefs. Our actual results could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified below and those discussed in the section titled "Risk Factors" included elsewhere in this prospectus.

Overview

We are an immuno-oncology company developing tumor-specific cancer immunotherapies to fight multiple cancer types. Our approach harnesses the natural power of a patient's own immune system to recognize short tumor-specific peptide sequences presented on cancer cells, referred to as tumor-specific neoantigens, or TSNA, in order to destroy tumor cells. Our tumor-specific immunotherapy treatment is built on two key pillars—first, our proprietary Gritstone EDGE platform, which gives us a superior ability to predict, from a routine tumor biopsy, the TSNA that are presented on a patient's tumor cells; and second, our ability to develop and manufacture potent immunotherapies utilizing patients' TSNA to drive the patient's immune system to attack and destroy tumors.

We intend to initiate a Phase 1/2 clinical trial of our first personalized immunotherapy product candidate, GRANITE-001, in the second half of 2018, evaluating it in the treatment of common solid tumors, including metastatic non-small cell lung cancer and gastroesophageal, bladder and colorectal cancers, in each case in combination with checkpoint inhibitors. Our second tumor-specific product candidate series, SLATE, utilizes the same antigen delivery system as GRANITE-001 but contains a fixed cassette with TSNA that are shared across a subset of cancer patients rather than a cassette unique to an individual patient, providing us with an off-the-shelf alternative to our personalized manufactured product candidate, GRANITE-001. We intend to initiate a Phase 2 clinical trial of SLATE-001, our first "off-the-shelf" product candidate in the second half of 2019.

Beyond TSNA-directed therapeutics, we are leveraging our expertise in cancer genomics and our tumor antigen discovery platform to identify novel peptide sequences (not mutated) that may be shared across common tumor types (tumor-specific shared antigens), which we believe likely have value as targets to direct T cells onto tumors specifically. These shared antigen targets enable us to opportunistically partner or develop additional therapeutic approaches to redirect T cells onto tumors using these highly specific targets. These approaches include (1) "off-the-shelf" shared, non-mutated tumor antigens in our heterologous prime-boost platform, (2) modifying the receptors of the patient's own T cells to help them recognize tumor targets (adoptive T cell therapy) and (3) using small adapter proteins that have two recognition arms—one for tumors and one for T cells (bispecific antibodies).

We have funded our operations to date primarily from private placements of our convertible preferred stock. We do not expect to generate revenue from any product candidates that we develop until we obtain regulatory approval for one or more of such product candidates and commercialize our products or enter into collaboration agreements with third parties. Substantially all of our net losses have resulted from costs incurred in connection with our research and development programs and from general and administrative costs associated with our operations. GRANITE-001 and SLATE-001 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. In addition, upon the

completion of this offering we expect to incur additional costs associated with operating as a public company. We also do not yet have a sales organization or commercial infrastructure and, accordingly, we will incur significant expenses to develop a sales organization or commercial infrastructure in advance of generating any commercial product sales. As a result, we will need substantial additional capital to support our operating activities.

We currently anticipate that we will seek to fund our operations through equity or debt financings or other sources, such as potential collaboration agreements with third parties. Adequate funding may not be available to us on acceptable terms, or at all. If sufficient funds on acceptable terms are not available when needed, we will be required to significantly reduce our operating expenses and delay, reduce the scope of, or eliminate one or more of our development programs. As a result, there is substantial doubt about our ability to continue as a going concern. See “—Liquidity and Capital Resources” below and Note 2 to the audited financial statements and unaudited interim condensed financial statements and related notes included elsewhere in this prospectus for additional information describing the circumstances that led to this determination.

Manufacturing is a vital component of personalized immunotherapy, and we have invested significantly in our manufacturing facility, which opened in November 2017. We currently use a hybrid approach to manufacturing our personalized immunotherapy wherein certain elements of our product candidates are manufactured on an outsourced basis at qualified third-party contract manufacturing organizations, or CMOs, and other elements of our product candidates are manufactured internally. Our goal is to internalize the majority of the manufacturing steps to drive down both cost and production time, as well as establish full control over intellectual property and product quality, which will require significant investments in our manufacturing facility and processes.

Since we commenced operations in August 2015, we have invested a significant portion of our efforts and financial resources in research and development activities and establishing our manufacturing facility, and we have incurred net losses each year since inception. Our net losses were \$18.8 million and \$41.4 million for the years ended December 31, 2016 and 2017, respectively, and \$28.8 million for the six months ended June 30, 2018. We do not have any products approved for sale, and we have never generated any revenue from contracts with customers. As of June 30, 2018, we had an accumulated deficit of \$90.5 million, and we do not expect positive cash flows from operations in the foreseeable future. We expect to continue to incur net operating losses for at least the next several years as we advance our personalized cancer immunotherapy through clinical development, seek regulatory approval, prepare for and, if approved, proceed to commercialization, continue our research and development efforts and invest in our manufacturing facility.

Components of Our Operating Results

Operating Expenses

Research and Development Expenses

Since our inception, we have focused significant resources on our research and development activities, including conducting preclinical studies, manufacturing development efforts and activities related to the submission of our Investigational New Drug application, or IND, for GRANITE-001. Research and development activities account for a significant portion of our operating expenses. Research and development costs are expensed as incurred. These costs include:

- External research and development expenses, including:
 - Expenses incurred under arrangement with third parties, including clinical research organizations, or CROs, preclinical testing organizations, CMOs, academic and non-profit institutions and consultants;
 - Fees related to our license agreements;

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- Personnel related expenses, including salaries, payroll taxes, benefits, non-cash stock-based compensation and travel, for employees contributing to research and development activities, including the costs associated with the development of our EDGE platform; and
- Other expenses, which include direct and allocated expenses for laboratories, facilities and other costs.

In October 2017, we entered into a license agreement with Arbutus Biopharma Corporation, or Arbutus. Certain terms of the agreement were modified by amendment in July 2018. Under the agreement, Arbutus grants us a worldwide, exclusive license to certain technology of Arbutus, including Arbutus' portfolio of proprietary and clinically validated LNP products and associated intellectual property, as well as technology transfer of Arbutus' manufacturing know-how. Under this agreement, we made an upfront payment of \$5.0 million, which was included in research and development expenses during the year ended December 31, 2017. We also reimbursed Arbutus for materials and personnel costs totaling \$0.2 million, which were included in research and development expenses during the same period. During the six months ended June 30, 2018, we reimbursed Arbutus for materials and personnel costs totaling \$0.3 million. See "Business—Manufacturing and Process Development—License Agreement with Arbutus Biopharma Corporation" for additional information.

We expect our research and development expenses to increase substantially in the future as we advance our personalized cancer immunotherapy candidate into and through clinical studies and pursue regulatory approval. The process of conducting the necessary clinical studies to obtain regulatory approval is costly and time-consuming. Clinical studies generally become larger and more costly to conduct as they advance into later stages and, in the future, we will be required to make estimates for expense accruals related to clinical study expenses. The successful development of our product candidates is highly uncertain. The actual probability of success for our product candidates may be affected by a variety of risks and uncertainties associated with drug development, including those set forth in the section of this prospectus titled "Risk Factors." At this time, we cannot reasonably estimate the nature, timing or costs required to complete the remaining development of our current or any future product candidates. As a result of these uncertainties, we are unable to determine the duration and completion costs of our research and development projects or when and to what extent we will generate revenue from the commercialization and sale of our product candidates.

Due to the early-stage nature of our personalized cancer immunotherapy programs, we do not track costs on a project-by-project basis. As our programs enter clinical studies, we intend to track the costs of each program.

General and Administrative Expenses

Our general and administrative expenses consist primarily of salaries and related costs, including payroll taxes, benefits, non-cash stock-based compensation and travel. Other general and administrative expenses include legal costs of pursuing patent protection of our intellectual property, and professional service fees for auditing, tax and general legal services. We expect our general and administrative expenses to continue to increase in the future as we expand our operating activities and prepare for potential commercialization of our current and future product candidates, increase our headcount and support our operations as a public company, including increased expenses related to legal, accounting, regulatory and tax-related services associated with maintaining compliance with requirements of The Nasdaq Global Market and the SEC, directors and officers liability insurance premiums and investor relations activities. Allocated expenses consist of rent expenses related to our office and research and development facilities, depreciation and other allocated costs not otherwise included in research and development expenses.

Interest Income, Net

Interest income, net, consists primarily of interest income and investment income earned on our cash, cash equivalents and marketable securities, and interest expense on our lease financing obligation.

Results of Operations

Comparison of the Six Months Ended June 30, 2017 and 2018

The following table sets forth the significant components of our results of operations (in thousands):

| | Six Months Ended June 30, | | Change |
|----------------------------|------------------------------|-------------------|-------------------|
| | 2017 | 2018 | |
| Operating Expenses: | | | |
| Research and development | \$ 11,855 | \$ 24,090 | \$ 12,235 |
| General and administrative | 2,840 | 4,852 | 2,012 |
| Total operating expenses | 14,695 | 28,942 | 14,247 |
| Loss from operations | (14,695) | (28,942) | (14,247) |
| Interest income, net | 138 | 94 | (44) |
| Net loss | <u>\$(14,557)</u> | <u>\$(28,848)</u> | <u>\$(14,291)</u> |

Research and Development Expenses

Research and development expenses were \$11.9 million for the six months ended June 30, 2017 compared to \$24.1 million for the six months ended June 30, 2018. The increase of \$12.2 million was primarily due to increases in personnel related expenses, expenses related to outside services and consultants, in-house laboratory supplies and consumables, and facilities expenses. Personnel related costs increased by \$3.4 million, as a direct result of our increased research and development headcount. Outside services and consultants increased by \$4.6 million for preclinical testing and contract manufacturing expansion. In-house expenses for laboratory supplies and consumables increased by \$2.1 million, and reflect our increased research and development personnel. Facility related expenses increased by \$2.2 million to accommodate our manufacturing expansion and increased research and development personnel.

General and Administrative Expenses

General and administrative expenses were \$2.8 million for the six months ended June 30, 2017 compared to \$4.8 million for the six months ended June 30, 2018. The increase of \$2.0 million was primarily attributable to a \$1.3 million increase in personnel related costs as we expanded our headcount, and a \$0.5 million increase in outside services for finance, recruiting and other professional services to support our ongoing operations. Facility related expenses increased by \$0.1 million to accommodate our increased general and administrative personnel.

Comparison of the Years Ended December 31, 2016 and 2017

The following table sets forth the significant components of our results of operations (in thousands):

| | Year Ended December 31, | | Change |
|----------------------------|----------------------------|-------------------|-------------------|
| | 2016 | 2017 | |
| Operating Expenses: | | | |
| Research and development | \$ 13,916 | \$ 35,691 | \$ 21,775 |
| General and administrative | 5,064 | 6,072 | 1,008 |
| Total operating expenses | 18,980 | 41,763 | 22,783 |
| Loss from operations | (18,980) | (41,763) | (22,783) |
| Interest income, net | 230 | 386 | 156 |
| Net loss | <u>\$(18,750)</u> | <u>\$(41,377)</u> | <u>\$(22,627)</u> |

Research and Development Expenses

Research and development expenses were \$13.9 million for the year ended December 31, 2016 compared to \$35.7 million for the year ended December 31, 2017. The increase of \$21.8 million was primarily due to increases in personnel related expenses, license payments, expenses related to outside services and consultants, in-house laboratory supplies and consumables, and facilities expenses. Personnel related costs increased by \$6.7 million, as a direct result of our increased research and development headcount. License payments increased by \$5.1 million primarily as a result of our \$5.0 million up-front payment to Arbutus. Outside services and consultants increased by \$5.1 million for preclinical testing, sample acquisition and manufacturing expansion. In-house expenses for laboratory supplies and consumables increased by \$3.7 million, and reflect our increased research and development personnel. Facility related expenses increased by \$1.1 million to accommodate our increased research and development personnel and manufacturing expansion.

General and Administrative Expenses

General and administrative expenses were \$5.1 million for the year ended December 31, 2016 compared to \$6.1 million for the year ended December 31, 2017. The increase of \$1.0 million was primarily attributable to a \$0.6 million increase in personnel related costs as we expanded our headcount, and a \$0.5 million increase in outside services for patent, legal and professional services to support our ongoing operations.

Interest Income, Net

Interest income was \$0.2 million for the year ended December 31, 2016 compared to interest income of \$0.4 million for the year ended December 31, 2017. The income for both years represents interest and investment income from cash, cash equivalents and marketable securities. The increase of \$0.2 million was due to a higher average cash, cash equivalents and marketable securities balance in the year ended December 31, 2017, partially offset by interest expense incurred on our lease financing obligation.

Liquidity and Capital Resources**Sources of Liquidity**

From our inception through June 30, 2018, we have funded our operations primarily through private placements of our convertible preferred stock and have raised net cash proceeds of

\$165.9 million from the issuance of our convertible preferred stock. As of June 30, 2018, we had cash, cash equivalents and marketable securities of \$64.5 million. Key financing and corporate milestones include:

- In September 2015, we raised net proceeds of \$25.5 million from issuances of our Series A convertible preferred stock.
- In April 2016, we raised net proceeds of \$35.7 million from additional issuances of our Series A convertible preferred stock.
- In September and October 2017, we raised net proceeds of \$95.8 million from issuances of our Series B convertible preferred stock.
- In June and July 2018, we raised net proceeds of \$11.0 million from issuances of our Series C convertible preferred stock.

Additionally, we do not expect positive cash flows from operations in the foreseeable future. Historically, we have incurred operating losses as a result of ongoing efforts to develop our personalized cancer immunotherapy candidate, including conducting ongoing research and development, preclinical studies and providing general and administrative support for these operations. We expect to continue to incur net operating losses for at least the next several years as we advance GRANITE-001, SLATE-001 and any future product candidates through clinical development, seek regulatory approval, prepare for and, if approved, proceed to commercialization, continue our research and development efforts and invest in our manufacturing facility.

Future Funding Requirements

We do not have any products approved for sale, and we have never generated any revenue from contracts with customers. We do not expect to generate any meaningful revenue unless and until we obtain regulatory approval of and commercialize any of our current and future product candidates and/or enter into collaboration agreements with third parties, and we do not know when, or if, either will occur. We expect to continue to incur significant losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our current and future product candidates, and begin to commercialize any approved products. We are subject to all the risks typically related to the development of new product candidates, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. Moreover, following the completion of this offering, we expect to incur additional costs associated with operating as a public company. We anticipate that we will need substantial additional funding in connection with our continuing operations.

Until we can generate a sufficient amount of revenue from the commercialization of our tumor-specific immunotherapy product candidates or from collaboration or license agreements with third parties, if ever, we expect to finance our future cash needs through public or private equity offerings or debt financings. Additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our current or future product candidates. If we raise additional funds by issuing equity or convertible debt securities, it could result in dilution to our existing stockholders and increased fixed payment obligations. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. If we incur indebtedness, we could become subject to covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Additionally, any future collaborations we enter into with

third parties may provide capital in the near term but we may have to relinquish valuable rights to our product candidates or grant licenses on terms that are not favorable to us. Any of the foregoing could significantly harm our business, financial condition and prospects.

Since our inception, we have incurred significant losses and negative cash flows from operations. We have an accumulated deficit of \$90.5 million through June 30, 2018. We expect to incur substantial additional losses in the future as we conduct and expand our research and development activities. These conditions raise substantial doubt about our ability to continue as a going concern for a period of one year from the date of the issuance of our 2017 financial statements. The accompanying audited financial statements and unaudited interim condensed financial statements and related notes have been prepared assuming that we will continue as a going concern, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. The audited financial statements and unaudited interim condensed financial statements and related notes do not reflect any adjustments relating to the recoverability and classification of assets or amounts and classification of liabilities that might be necessary if we are unable to continue as a going concern.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect and we may use all our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of product candidates, we are unable to estimate the exact amount of our operating capital requirements. Our future capital requirements depend on many factors, including:

- the scope, progress, results and costs of developing our tumor-specific immunotherapy product candidates, and conducting preclinical studies and clinical trials, including our planned Phase 1/2 clinical trial of GRANITE-001, which we expect to initiate in the second half of 2018;
- the scope, progress, results and costs of conducting studies and clinical trials for our SLATE product candidate series, including the Phase 2 clinical trial for SLATE-001, which we expect to initiate in the second half of 2019;
- the timing of, and the costs involved in, obtaining regulatory approvals for our tumor-specific immunotherapy product candidates;
- the number and characteristics of any additional product candidates we develop or acquire;
- the timing and amount of any milestone, royalty or other payments we are required to make pursuant to any current or future collaboration or license agreements;
- the cost of manufacturing our tumor-specific immunotherapy product candidates we successfully commercialize, including the cost of scaling up our internal manufacturing operations;
- the cost of building a sales force in anticipation of product commercialization;
- the cost of commercialization activities, including building a commercial infrastructure, marketing, sales and distribution costs;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the expenses needed to attract, hire and retain skilled personnel;
- the costs associated with being a public company;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing our intellectual property portfolio; and
- the timing, receipt and amount of sales of any future approved products, if any.

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A change in the outcome of any of these or other variables with respect to the development of any of our current and future product candidates could significantly change the costs and timing associated with the development of that product candidate. Furthermore, our operating plans may change in the future, and we will need additional funds to meet operational needs and capital requirements associated with such operating plans.

Cash Flows

The following table sets forth a summary of the primary sources and uses of cash (in thousands):

| | Year Ended December 31, | | Six Months Ended June 30, | |
|--|----------------------------|--------------------|------------------------------|--------------------|
| | 2016 | 2017 | 2017 | 2018 |
| Cash used in operating activities | <u>\$ (15,292)</u> | <u>\$ (34,971)</u> | <u>\$ (13,038)</u> | <u>\$ (27,066)</u> |
| Cash (used in) provided by investing activities | (32,127) | (33,252) | 6,870 | 17,363 |
| Cash provided by financing activities | 35,946 | 95,812 | 14 | 8,237 |
| Net (decrease) increase in cash and cash equivalents | <u>\$ (11,473)</u> | <u>\$ 27,589</u> | <u>\$ (6,154)</u> | <u>\$ (1,466)</u> |

Cash Used in Operating Activities

During the six months ended June 30, 2018, cash used in operating activities was \$27.1 million, which consisted of a net loss of \$28.8 million, adjusted by non-cash charges of \$2.9 million and cash used due to changes in our operating assets and liabilities of \$1.1 million. The non-cash charges consisted primarily of depreciation and amortization expense of \$1.7 million and stock-based compensation of \$1.2 million. The change in our operating assets and liabilities was primarily due to a decrease of \$1.4 million in accounts payable and other accrued liabilities as a result of accrued bonus payments and vendor payments made during the first half of the year, and a decrease of \$0.5 million in prepaid expenses and other assets.

During the six months ended June 30, 2017, cash used in operating activities was \$13.0 million, which consisted of a net loss of \$14.6 million, adjusted by non-cash charges of \$1.3 million and cash used due to changes in our operating assets and liabilities of \$0.2 million. The non-cash charges consisted primarily of depreciation and amortization expense of \$0.8 million and stock-based compensation of \$0.5 million. The change in our operating assets and liabilities was primarily due to a decrease of \$0.4 million in accrued and other liabilities, and an increase of \$0.2 million in prepaid expenses and other assets.

During the year ended December 31, 2017, cash used in operating activities was \$35.0 million, which consisted of a net loss of \$41.4 million, adjusted by non-cash charges of \$2.9 million and cash provided by changes in our operating assets and liabilities of \$3.5 million. The non-cash charges consisted primarily of depreciation and amortization expense of \$1.8 million and stock-based compensation of \$1.1 million. The change in our operating assets and liabilities was primarily due to an increase of \$4.3 million in accounts payable and accrued liabilities. Our accrued liabilities increased due to employee bonuses and general business expenses, reflective of our increased headcount and expenses. This was partially offset by an increase of \$0.4 million in prepaid expenses and other current assets for prepaid research and development being conducted by third-party service providers.

During the year ended December 31, 2016, cash used in operating activities was \$15.3 million, which consisted of a net loss of \$18.8 million, adjusted by non-cash charges of \$1.6 million and cash provided by changes in our operating assets and liabilities of \$1.9 million. The non-cash charges

consisted primarily of depreciation and amortization expense of \$0.9 million and stock-based compensation of \$0.6 million. The change in our operating assets and liabilities was primarily due to an increase of \$2.1 million in deferred rent liability primarily associated with a tenant improvement allowance from our landlord, and an increase of \$0.8 million in accounts payable and accrued liabilities. Our accrued liabilities increased due to employee bonuses and general business expenses, reflective of our increased headcount and expenses. This was partially offset by an increase of \$0.9 million in prepaid expenses and other assets primarily associated with prepayments made for ongoing research and development being conducted by third-party service providers and security deposits for our leased facilities.

Cash Used in Investing Activities

During the six months ended June 30, 2018, cash provided by investing activities was \$17.4 million, which consisted of \$20.2 million in proceeds from the maturity of marketable securities, offset by \$2.9 million of capital expenditures to purchase property and equipment.

During the six months ended June 30, 2017, cash provided by investing activities was \$6.9 million, which consisted of \$26.9 million in proceeds from the maturity of marketable securities, offset by \$16.3 million of purchases of marketable securities and \$3.4 million of capital expenditures to purchase property and equipment.

During the year ended December 31, 2017, cash used in investing activities was \$33.3 million, which consisted of \$63.2 million of purchases of marketable securities, \$11.5 million of capital expenditures to purchase property and equipment, offset by \$41.5 million in proceeds from the maturity of marketable securities.

During the year ended December 31, 2016, cash used in investing activities was \$32.1 million, which consisted of \$48.0 million of purchases of marketable securities, \$7.0 million of capital expenditures to purchase property and equipment, offset by \$22.9 million in proceeds from the maturity of marketable securities.

Cash Provided by Financing Activities

During the six months ended June 30, 2018, cash provided by financing activities was \$8.2 million, which primarily consisted of \$8.9 million in net proceeds from the issuances of shares of our Series C convertible preferred stock, offset by \$0.8 million paid for deferred offering costs associated with preparation for our initial public offering.

During the six months ended June 30, 2017, cash provided by financing activities was \$14,000, which consisted of proceeds from the purchase of common stock under our equity incentive plan.

During the year ended December 31, 2017, cash provided by financing activities was \$95.8 million, which primarily consisted of net proceeds from the issuances of shares of our convertible preferred stock.

During the year ended December 31, 2016, cash provided by financing activities was \$35.7 million, which primarily consisted of net proceeds from the issuances of shares of our convertible preferred stock.

Since our inception through June 30, 2018, we have raised an aggregate of approximately \$166.0 million through the issuance and sale of shares of our convertible preferred stock, net of \$0.4 million in issuance costs, which we have used to fund our operations. During 2018, net proceeds from our sale of Series C convertible preferred stock were \$11.0 million including our July 2018 sale of Series C preferred stock. During 2017, net proceeds from our sale of Series B convertible preferred stock were \$95.8 million. During 2016, net proceeds from our sale of Series A convertible preferred stock were \$35.7 million.

Off-Balance Sheet Arrangements

We have not entered into any off-balance sheet arrangements, as defined under SEC rules.

Contractual Obligations and Commitments

The following table summarizes our contractual obligations as of December 31, 2017 (in thousands):

| | Payments Due by Period | | | | |
|-------------------------------|------------------------|---------------------|----------------|----------------|----------------------|
| | Total | Less than 1 Year | 1-3 Years | 3-5 Years | More than 5 Years |
| Operating leases(1) | \$ 8,410 | \$ 1,642 | \$3,451 | \$2,921 | \$ 396 |
| Lease financing obligation(1) | 5,768 | 708 | 1,612 | 1,711 | 1,737 |
| Total obligations | <u>\$14,178</u> | <u>\$ 2,350</u> | <u>\$5,063</u> | <u>\$4,632</u> | <u>\$ 2,133</u> |

(1) See Note 6 to our financial statements included elsewhere in this prospectus.

We are party to license agreements pursuant to which we have in-licensed various intellectual property rights. The license agreements obligate us to make certain milestone payments related to achievement of specified events, as well as royalties in the low-single digits based on sales of licensed products. None of these events had occurred as of December 31, 2017, and no royalties were due from the sales of licensed products. The table above does not include any milestone or royalty payments to the counterparties to these agreements as the amounts, timing and likelihood of such payments are not known. See Note 7 to our financial statements for additional information.

In September 2017, we entered into a contract research and development agreement with a third party CRO to provide research, analysis and antibody samples to further the development of our personalized immunotherapy candidate in the treatment of cancer. Under the agreement, we paid an upfront payment of \$0.5 million to the CRO. The upfront payment has been capitalized and will be recognized as research and development expense using the straight-line method over the term of the agreement, which is one year. We are also obligated to pay up to \$0.4 million to the CRO upon the completion of certain phases of the research services. These costs will be recorded to research and development expense over the expected period of each phase of the research services. We are also obligated to pay the CRO certain milestone payments of up to \$36.4 million on achievement of specified events. None of these events had occurred as of June 30, 2018. However, we are unable to estimate the timing or likelihood of achieving the milestones and, therefore, any related payments are not included in the table above.

Critical Accounting Policies and Use of Estimates

This discussion and analysis of financial condition and results of operation is based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States, or GAAP. The preparation of financial statements requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as of the date of the financial statements and the reported amounts of expenses during the reporting period. On an ongoing basis, management evaluates its estimates, including those related to preclinical study trial accruals, fair value of assets and liabilities, and the fair value of common stock and stock-based compensation. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions that management believes to be reasonable under the circumstances. Actual results could differ from those estimates.

While our significant accounting policies are more fully described in the notes to our audited financial statements included elsewhere in this prospectus, we believe that the following accounting policies are critical to the process of making significant judgments and estimates in the preparation of our financial statements and understanding and evaluating our reported financial results.

Research and Development Expenses

We record research and development expenses to operations as incurred. Research and development expenses represent costs incurred by us for the discovery and development of our product candidates and the development of our technology and include: employee-related expenses, including salaries, benefits, travel and non-cash stock-based compensation expense; external research and development expenses incurred under arrangements with third parties, such as CROs, preclinical testing organizations, CMOs, academic and non-profit institutions and consultants; license fees; and other expenses, which include direct and allocated expenses for laboratory, facilities and other costs. Costs to develop our technologies are recorded as research and development expense unless the criteria to be capitalized as internal-use software costs is met.

As part of the process of preparing financial statements, we are required to estimate and accrue expenses. We record the estimated expenses of research and development activities conducted by third-party service providers based upon the estimated amount of services provided within research and development expense in the statements of operations and comprehensive loss. These services include the conduct of preclinical studies, contract manufacturing activities and consulting services. Payments made prior to the receipt of goods or services to be used in research and development are deferred and recognized as expense in the period in which the related goods are received or services are rendered. If the costs have been prepaid, this expense reduces the prepaid expenses in the balance sheet, and if not yet invoiced, the costs are included in accrued liabilities in the balance sheet. These costs are a significant component of our research and development expenses. We record amortization of prepaid expenses or accrued expenses for these costs based on the estimated amount of work completed and in accordance with agreements established with these third parties.

Costs for certain research and development activities are recognized based on an evaluation of the progress to completion of specific tasks. We estimate the amount of work completed through discussions with internal personnel and external service providers as to the progress or stage of completion of the services and the agreed-upon fee to be paid for such services. We make significant judgments and estimates in determining the accrued balance in each reporting period. As actual costs become known, we adjust our accrued estimates. 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 may vary from our estimates and could result in us reporting amounts that are too high or too low in any particular period. Our accrued expenses are dependent, in part, upon the receipt of timely and accurate reporting from external CROs and other third-party service providers. To date, we have not experienced material differences between our accrued expenses and actual expenses.

We have and may continue to enter into license agreements to access and utilize certain technology. We evaluate if the license agreement is an acquisition of an asset or a business. To date none of our license agreements have been considered to be an acquisition of a business. For asset acquisitions, the upfront payments to acquire such licenses, as well as any future milestone payments made before product approval, are immediately recognized as research and development expense when due, provided there is no alternative future use of the rights in other research and development projects. These license agreements may also include contingent consideration in the form of cash. We assess whether such contingent consideration meets the definition of a derivative.

Stock-Based Compensation

We measure stock-based compensation expense for stock options granted to our employees and directors on the date of grant and recognize the corresponding compensation expense of those awards over the requisite service period, which is generally the vesting period of the respective award. We account for stock-based compensation arrangements with non-employee consultants using a fair value approach. The estimated fair value of unvested options granted to non-employee consultants is remeasured at each reporting date through the date of final vesting. As a result, the noncash charge to operations for nonemployee options with vesting conditions is affected in each reporting period by changes in the estimated fair value of our common stock. Forfeitures of awards are estimated based on historical forfeiture experience and the experience of other companies in the same industry. The estimate of forfeitures will be adjusted over the service period to the extent that actual forfeitures differ, or are expected to differ, from prior estimates.

We estimate the fair value of stock options granted to our employees and directors on the grant date, and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model. The Black-Scholes option-pricing model requires the use of subjective assumptions which determine the fair value of stock-based awards. These assumptions include:

- *Expected Term.* Our expected term represents the period that our stock options are expected to be outstanding and is determined using the simplified method (based on the mid-point between the vesting date and the end of the contractual term), as we do not have sufficient historical data to use any other method to estimate expected term.
- *Expected Volatility.* As there has been no public market for our common stock to date, and as a result we do not have any trading history of our common stock, expected volatility is estimated based on the average volatility for comparable publicly traded biopharmaceutical companies over a period equal to the expected term of the stock option grants. The comparable companies are chosen based on their similar size, stage in the life cycle or area of specialty.
- *Risk-Free Interest Rate.* The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of the stock option grants.
- *Expected Dividend Yield.* We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we use an expected dividend yield of zero.

For options granted to non-employee consultants, the fair value of the unvested portion of the options is also remeasured using the Black-Scholes option-pricing model reflecting the same assumptions as applied to employee options in each of the reported periods, other than the expected life, which is assumed to be the remaining contractual life of the option.

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, 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 factors that may have changed from the date of the most recent valuation through the date of the grant. These factors include, but are not limited to: our most recently available valuations of our common stock by an unrelated third party; the prices at which we sold shares of our convertible preferred stock to outside investors in arms-length transactions; the rights, preferences and privileges of our convertible preferred stock relative to those of our common stock; our results of operations, financial position and capital resources; current business conditions and projections; the lack of marketability of our common stock; the hiring of key personnel and the experience of management; the risk inherent in the development of our products; our stage of development and material risks related to

its business; the fact that the option grants involve illiquid securities in a private company; and the likelihood of achieving a liquidity event, such as an initial public offering or sale, in light of prevailing market conditions.

We have periodically determined the estimated fair value of our common stock at various dates using contemporaneous valuations 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*, or the Practice Aid. The Practice Aid identifies various available methods for allocating enterprise value across classes and series of capital stock to determine the estimated fair value of common stock at each valuation date. In accordance with the Practice Aid, our board of directors considered the following methods:

- *Current Value Method.* Under the Current Value Method, or CVM, our value is determined based on our balance sheet. This value is then first allocated based on the liquidation preference associated with preferred stock issued as of the valuation date, and then any residual value is assigned to the common stock.
- *Option-Pricing Method.* Under the option-pricing method, or OPM, shares are valued by creating a series of call options with exercise prices based on the liquidation preferences and conversion terms of each equity class. The estimated fair values of the preferred and common stock are inferred by analyzing these options.
- *Probability-Weighted Expected Return Method.* The probability-weighted expected return method, or PWERM, is a scenario-based analysis that estimates value per share based on the probability-weighted present value of expected future investment returns, considering each of the possible outcomes available to us, as well as the economic and control rights of each share class.

Our board of directors and management develop best estimates based on application of these approaches and the assumptions underlying these valuations, giving careful consideration to the advice from our third-party valuation expert. Such estimates involve inherent uncertainties and the application of significant judgment. As a result, if factors or expected outcomes change and we use significantly different assumptions or estimates, our equity-based compensation could be materially different. Following the closing of this offering, our board of directors will determine the fair market value of our common stock based on its closing price as reported on the date of grant on the primary stock exchange on which our common stock is traded.

The intrinsic value of all outstanding options as of June 30, 2018 was approximately \$ million, based on the assumed initial public offering price of \$ per share, the midpoint of the range set forth on the cover page of this prospectus, of which approximately \$ million is related to vested options and approximately \$ million is related to unvested options.

Leases, Deferred Rent and Lease Financing Accounting

We rent our office space and facilities under non-cancelable operating lease agreements and recognize related rent expense on a straight-line basis over the term of the lease. Our lease agreements contain rent holidays, scheduled rent increases and renewal options. Rent holidays and scheduled rent increases are included in the determination of rent expense to be recorded ratably over the lease term. We do not assume renewals in its determination of the lease term unless they are deemed to be reasonably assured at the inception of the lease. We begin recognizing rent expense on the date that we obtain the legal right to use and control the leased space. Deferred rent consists of the difference between cash payments and the recognition of rent expense on a straight-line basis for the buildings we occupy.

Funding of leasehold improvements by our landlord is accounted for as a tenant improvement allowance and recorded as current and non-current deferred rent liabilities and amortized on a straight-line basis as a reduction of rent expense over the term of the lease.

In certain arrangements, we are involved in the construction of improvements to buildings we are leasing. To the extent we are involved with the structural improvements of the construction project or take construction risk, we are considered to be the owner of the building and related improvements for accounting purposes during the construction period. Therefore, we record the fair value of the building subject to the lease within property and equipment on the balance sheet, plus the amount of building improvements incurred and funded by us and/or the landlord as of the balance sheet date. We also record a corresponding lease financing obligation on our balance sheet representing the amounts financed by the lessor for the building and lessor financed improvements. Lessor financed improvement incentives due but not yet received are recorded as prepaid expense and other current assets on the balance sheet.

Once construction is completed, we consider the requirements for sale-leaseback accounting treatment, including evaluating whether all risks of ownership have been transferred back to the landlord, as evidenced by a lack of our continuing involvement in the leased property. If we conclude the arrangement does not qualify for sale-leaseback accounting treatment, the building and improvements remain on our balance sheet and are subject to depreciation and assessment of impairment. We bifurcate our lease payments into a portion allocated to the lease financing obligation and a portion allocated to the parcel of land on which the building has been built. The portion of the lease payments allocated to the land is treated for accounting purposes as operating lease payments, and therefore is recorded as rent expense in the statements of operations and comprehensive loss. The portion of the lease payments allocated to the lease financing obligation is further bifurcated into a portion allocated to interest expense and a portion allocated to reduce the lease financing obligation.

The interest rate used for the lease financing obligation represents our estimated incremental borrowing rate at the inception of the lease, adjusted to reduce any built-in loss. The initial recording of these assets and liabilities is classified as non-cash investing and financing items, respectively, for purpose of the statements of cash flows.

The most significant estimates used by management in accounting for the lease financing transaction and the impact of these estimates are as follows:

- *Incremental borrowing rate.* We estimate our incremental borrowing rate as the rate we would have incurred to borrow, based on our credit quality at the inception of the lease over a similar term, the funds necessary to purchase the leased building subject to the financing lease transaction. The incremental borrowing rate is used in determining allocating our rental payments between interest expense and a reduction of the outstanding lease financing obligation.
- *Land capitalization rate.* The land capitalization rate is the rate of return on the land underlying the lease properly considering expected income that the land would be expected to generate. The land lease capitalization rate is estimated using comparable market data for land capitalization rates for similar properties. The land capitalization rate is used in determining allocating our rental payments between interest expense and a reduction of the outstanding lease financing obligation.
- *Fair value of leased building and underlying land.* The fair value of a leased building and underlying land subject to the lease financing transaction is based on comparable market data for similar properties as of the lease inception date. The fair value of the underlying land is used in determining allocating our rental payments between interest expense and a reduction of the outstanding lease financing obligation.

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In March 2017, we entered into a non-cancelable lease for 42,620 square feet of office, cleanroom, and laboratory support manufacturing space in Pleasanton, California. Subsequently, in April 2017, we took possession of the space. In connection with the lease, we received a tenant improvement allowance of \$1.2 million from the landlord for the costs associated with the design, development and construction of tenant improvements for the Pleasanton facility building. The scope of the tenant improvements did not qualify under the lease accounting guidance as “normal tenant improvements” and we were the deemed owner of the leased building during the construction period for accounting purposes. In November 2017, construction on the facility was substantially completed and the leased property was placed into service. We determined that the completed construction project did not qualify for sale-leaseback accounting due to the collateral held by the landlord in the form of a letter of credit and will instead be accounted for as a financing transaction. The leased building for the Pleasanton facility and related improvements remains on our balance sheet as of June 30, 2018 and rental payments associated with the lease have been allocated to operating lease expense for the ground underlying the leased building and principal and interest payments on the lease financing obligation.

JOBS Act

We are an emerging growth company under the JOBS Act. As an emerging growth company, we may delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have nonetheless irrevocably elected not to avail ourselves of this exemption and, as a result, upon completion of this offering we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies.

We will remain an emerging growth company until the earliest of (1) the last day of the fiscal year following the fifth anniversary of the consummation of this offering, (2) the last day of the fiscal year in which we have total annual gross revenue of at least \$1.07 billion, (3) the last day of the fiscal year in which we are deemed to be a “large accelerated filer” as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock held by non-affiliates exceeded \$700.0 million as of the last business day of the second fiscal quarter of such year or (4) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period.

Quantitative and Qualitative Disclosures About Market Risk

Interest Rate Sensitivity

We are exposed to market risk related to changes in interest rates. We had cash, cash equivalents and marketable securities of \$64.5 million as of June 30, 2018, which consisted primarily of money market funds and marketable securities, largely composed of investment grade, short-term fixed income securities.

The primary objective of our investment activities is to preserve capital to fund our operations. We also seek to maximize income from our investments without assuming significant risk. To achieve our objectives, we maintain a portfolio of investments in a variety of securities of high credit quality and short-term duration, according to our board-approved investment charter.

Our investments are subject to interest rate risk and could fall in value if market interest rates increase. A hypothetical 10% relative change in interest rates during any of the periods presented would not have had a material impact on our financial statements.

Recent Accounting Pronouncements

See Note 2 to our audited financial statements and unaudited interim condensed financial statements and related notes included elsewhere in this prospectus.

BUSINESS

Overview

We are an immuno-oncology company developing tumor-specific cancer immunotherapies to fight multiple cancer types. Our approach harnesses the natural power of a patient's own immune system to recognize short tumor-specific peptide sequences presented on cancer cells, referred to as tumor-specific neoantigens, or TSNA, in order to destroy tumor cells. We expect to initiate a Phase 1/2 clinical trial of our first personalized immunotherapy product candidate, GRANITE-001, in the second half of 2018 for the treatment of multiple common solid tumors. Our tumor-specific immunotherapy treatment is built on two key pillars—first, our proprietary Gritstone EDGE™ platform, which gives us a superior ability to predict, from a routine tumor biopsy, the TSNA that are presented on a patient's tumor cells; and second, our ability to develop and manufacture a potent immunotherapy utilizing patients' TSNA to drive the patient's immune system to attack and destroy tumors. Our tumor-specific immunotherapy portfolio consists of our personalized immunotherapy product candidate, GRANITE-001, which is manufactured uniquely for each patient, and our off-the-shelf immunotherapy product candidate series, SLATE, which is designed for selected subsets of patients with common tumor neoantigens. Our tumor-specific immunotherapy candidates are designed to fit easily into a community oncology setting and to be administered in earlier lines of treatment, in combination with checkpoint inhibitors to further drive a robust T cell response, rather than only in refractory or relapsed cancers.

Immuno-oncology represents one of the most significant advances in the history of cancer treatment. In 2014, the first checkpoint inhibitor was approved and today, despite only a modest breadth of efficacy across patients, this class of therapies is predicted to reach over \$32 billion in combined global sales by 2022. However, because checkpoint inhibitors work through relatively non-specific stimulation of occasional, pre-existing, tumor-specific T cells, they are effective in only a subset of patients, with objective responses (substantial tumor shrinkage) observed in 0-20% of all patients with cancer of the lung, breast, prostate, colon/rectum and ovary (the major lethal solid tumor types). Many patients appear not to possess meaningful numbers of T cells that recognize their tumor (so-called "cold" tumors). We believe the path to broader immuno-oncology efficacy and more meaningful clinical responses resides in the *de novo* generation of new, potent, tumor-specific T cell responses.

The first pillar of our tumor-specific cancer immunotherapy approach is our understanding of TSNA and the application of our artificial intelligence based, proprietary Gritstone EDGE platform to predict the presence of a patient's unique TSNA on tumor cells. While there are frequently hundreds of mutations in the DNA of a tumor cell, only approximately 1% of these mutations are actually transcribed, translated and processed into a unique "non-self" peptide sequence that is presented on the surface of tumor cells and can therefore be recognized by the patient's own T cells. Furthermore, these rare TSNA are almost all unique to each individual patient's tumor. Current technologies cannot predict the presence of TSNA with sufficient accuracy to design a therapy that is likely to be effective. The Gritstone EDGE platform consists of proprietary machine learning models that use DNA/RNA sequence data derived from a patient's tumor biopsy to predict which mutations will generate TSNA most likely to be presented on the tumor cell surface. Applying our EDGE platform to sequence data from human tumors, we have shown a nine-fold improvement in the accuracy of prediction with our platform compared to publicly available approaches.

The second pillar of our tumor-specific cancer immunotherapy approach is our ability to develop and manufacture a patient-specific therapeutic to direct a robust T cell response to those TSNA predicted to be presented on the patient's tumor. Our tumor-specific immunotherapy candidates, GRANITE-001 and SLATE-001, comprise a sequential immunization of a viral prime and RNA boosts delivered by intramuscular injection, which we refer to as our heterologous prime-boost. In our

GRANITE-001 product candidate each of the viral prime and RNA boost immunizations contain a patient-specific set of predicted TSNA, whereas the viral prime and RNA boost in our SLATE product candidate series contains a fixed TSNA cassette that is designed for the subset of patients who carry these antigens. Grounded in traditional infectious disease vaccine immunology, this two-step immunization utilizes a prime and a boost to educate the patient's T cells to detect TSNA and destroy tumor cells. In non-human primate models, we have demonstrated a profound and specific CD8+ and CD4+ T cell response to antigens administered in this way.

Our personalized immunotherapy process begins with a routine tumor biopsy from the patient. We utilize our in-house sequencing capabilities on the tumor sample and then apply our proprietary EDGE platform to derive a set of predicted TSNA likely to be presented on the patient's tumor. Using these TSNA, we design a highly potent personalized immunotherapy candidate containing the relevant neoantigens to be administered by simple intramuscular injection. We have designed each of our tumor-specific immunotherapy candidates such that oncologists will not have to alter their treatment practices, and we believe this will extend the utility of our medicines into the community oncology setting and not limit their use to scarce centers of excellence. We believe that as a result of its design, our tumor-specific immunotherapy candidate has the potential to expand the efficacy of immunotherapy into broader patient populations.

We intend to initiate a first-in-human Phase 1/2 clinical trial of our first personalized immunotherapy product candidate, GRANITE-001, in the second half of 2018, evaluating it in the treatment of common solid tumors, including metastatic non-small cell lung cancer, or NSCLC, and gastroesophageal, bladder and microsatellite stable, or MSS, colorectal cancers, in each case in combination with checkpoint inhibitors. The Phase 1 portion of our Phase 1/2 trial will seek to establish a dose for further investigation in Phase 2 and to evaluate safety, tolerability and, importantly, immunogenicity of our lead product candidate. We will seek to further evaluate efficacy and safety in the Phase 2 cohort expansion portion in several common solid tumor types. In July 2018, we entered into a clinical trial collaboration and supply agreement with Bristol-Myers Squibb Company to evaluate the safety and tolerability of GRANITE-001 in combination with OPDIVO (nivolumab) and in combination with OPDIVO plus YERVOY (ipilimumab), in patients with advanced solid tumors.

We will follow the initiation of our personalized clinical program with a Phase 2 clinical trial of SLATE-001, our first off-the-shelf, TSNA-directed immunotherapy product candidate in the second half of 2019. SLATE-001 utilizes the same heterologous prime boost approach as GRANITE-001 but contains a fixed cassette with TSNA that are shared across a subset of cancer patients rather than a cassette unique to an individual patient, providing us with an off-the-shelf alternative to our personalized manufactured product, GRANITE-001. SLATE-001 has the benefit of being readily available for rapid initiation of therapy, and is less expensive to manufacture than a personalized product. Early analyses suggest that while each such shared neoantigen may only be found in less than 2% of patients with a particular tumor type, our heterologous prime-boost can contain at least 20 of these TSNA, which we believe will result in the off-the-shelf product having an addressable population of approximately 10-15% of patients within common solid tumor types such as colorectal cancer and lung cancer. Our off-the-shelf product candidates are specific to a particular tumor type, and the TSNA module is fixed for each product. As a result, the essential aspect to the utilization of the off-shelf-product candidate is the ability to accurately identify patients whose tumors contain at least one of the TSNA represented within the off-the-shelf product candidate. Today, this can be simply achieved by screening the patient's tumor using commercially-available genomic screens and identifying the patient's HLA type from blood with a standard clinical assay.

We are also leveraging our expertise in cancer genomics and our tumor antigen discovery platform to identify novel peptide sequences (not mutated) that may be shared across common tumor types (tumor-specific shared antigens), which we believe are likely to have value as targets to direct T

cells onto tumors specifically. Shared antigen targets enable us to opportunistically partner or develop additional therapeutic approaches to redirect T cells onto tumors using these highly specific targets. Additional approaches include modifying the receptors of the patient's own T cells to help them recognize tumor targets (adoptive T cell therapy) and/or using small adapter proteins that have two recognition arms—one for tumors and one for T cells (bispecific antibodies).

The ability to control the manufacturing of a high-quality tumor-specific immunotherapy products, and scale production if early data are positive, is critical for efficient clinical development and commercialization. We have invested significant resources in our Cambridge, Massachusetts sequencing lab and our Pleasanton, California manufacturing facility to address these needs and position ourselves to control the critical steps in the production of our tumor-specific immunotherapy candidates.

To deliver on the promise of our novel therapeutic approach, we have assembled a highly experienced management team with focused expertise in each of our core disciplines of cancer genomics, immunology and vaccinology, clinical development, regulatory, and biomanufacturing from several leading biotechnology companies, including Clovis Oncology, Inc., Pfizer Inc., Genentech, Inc. and Foundation Medicine, Inc. Our co-founder Dr. Andrew Allen brings experience as a co-founder and Chief Medical Officer of Clovis Oncology, Inc., with prior experience in various leadership roles at Pharmion Corporation and Chiron Corporation, where he worked on Proleukin (IL-2), the first cancer immunotherapy. The scientific advisory board includes selected experts in relevant disciplines, including Dr. Timothy Chan (Memorial Sloan Kettering Cancer Center) and Dr. Naiyer Rizvi (Columbia University Medical Center) who together first demonstrated that TSNA are key T cell targets in cancer patients responding to checkpoint inhibitor therapy, as well as Dr. James Gulley (National Cancer Institute) who is an international expert in cancer immunotherapy with a focus on vaccines.

Our Strategy

We have assembled a team of industry leaders, each possessing specific expertise that allows us to build and deploy our proprietary EDGE platform to predict tumor-specific T cell targets and deliver personalized cancer immunotherapies to patients. Our goal is to eradicate cancer by initially developing personalized immunotherapies that focus on the unique and individual nature of a patient's tumor. Our strategy to achieve this includes the following key components:

- **Rapidly advance GRANITE-001, our lead product candidate, in multiple clinical settings, with the objective of generating a significant CD8+ T cell response to tumor-specific neoantigens.** GRANITE-001 is our first personalized immunotherapy product candidate. It is engineered to elicit a significant T cell response to selected antigens in humans (particularly CD8+ T cell responses) based upon extensive clinical experience with many different vectors in the realm of infectious disease. We have studied these clinical data closely and applied key learnings to the design and development of our immunotherapy platform. In the second half of 2018, we intend to submit our IND for GRANITE-001 and, upon acceptance, to initiate a first-in-human Phase 1/2 trial of our heterologous prime-boost regimen in combination with checkpoint inhibitors. Upon completion of the Phase 1 portion of the trial, we intend to demonstrate proof of concept in the Phase 2 portion of the trial, which will consist of single-arm cohort expansions in “cold” tumors (such as MSS colorectal cancer) where checkpoint inhibitors alone have very low efficacy, and in randomized cohorts in typically more inflamed tumors (such as lung, gastric or bladder cancer), where checkpoint inhibitors are known to have some activity but recurrence remains expected.
- **Invest in our Gritstone EDGE platform and maximize its utility across modalities.** Using contemporary sequencing and machine learning approaches, we have developed our EDGE

platform to accurately predict the antigenic landscape of a tumor that allows for its select targeting with personalized immunotherapy. The EDGE platform utilizes proprietary machine learning models and an extensive dataset of over a million HLA-presented peptides from over 300 human tumor and matched normal tissue specimens. We are initially applying the platform to develop multiple formats of personalized cancer immunotherapy candidates—including our heterologous prime-boost immunization containing TSNA (our lead program) as well as “off-the-shelf” therapies targeting shared tumor-specific antigens—in order to maximize the utility of our prediction capabilities across modalities. We intend to continually make investments to improve the EDGE platform’s prediction capabilities in order to develop more efficacious medicines. Genomic and immune response data from our clinical trials will serve to further validate and refine our machine learning platform.

- **Build upon the discoveries from our Gritstone EDGE platform to rapidly move SLATE-001, our shared-TSNA product candidate, into multiple clinical settings where shared neoantigens may have utility.** This includes—but will not be limited to—KRAS-driven tumors such as colorectal cancer, pancreatic ductal carcinoma and adenocarcinomas of the lung. We plan to submit an IND for SLATE-001 in the second half of 2019, and start Phase 2 clinical trials if and when data from GRANITE-001 have confirmed acceptable safety and immunogenicity of our prime-boost vaccine platform, together with Phase 2 dosing recommendations.
- **Continue to build our in-house manufacturing capabilities to maintain the highest controls on quality and capacity.** We believe the speed, quality, reliability and scalability of our manufacturing capabilities will be a core competitive advantage to our clinical development and commercial success, and we have invested extensively in building our own manufacturing facilities. We intend to internalize the majority of the manufacturing steps to drive down both cost and production time, as well as establish full control over intellectual property and product quality. We believe that operating our own manufacturing facility will provide us with enhanced control of material supply for both clinical trials and the commercial market, will enable the more rapid implementation of process changes, and will allow for better long-term margins.
- **Move tumor-specific immunotherapy into community oncology settings and earlier lines of treatment.** We are designing our tumor-specific immunotherapy product candidates to fit into a community oncology setting, where the vast majority of cancer patients are treated. We start with routine tumor biopsies, employ our EDGE platform to create a personalized immunotherapy, and administer it as an intramuscular injection. This approach is designed to enable oncologists to integrate our tumor-specific immunotherapy product candidates into their treatment practices without requiring a change in the current treatment paradigm. We believe this strategy has the potential to extend the use of our medicines into the community setting, enabling rapid trial execution, and expanding commercial use beyond limited centers of research excellence. Additionally, we intend to develop our tumor-specific immunotherapy product candidates in earlier lines of treatment, where recent clinical data with other forms of immunotherapy suggest efficacy is likely to be stronger, versus being only used in highly refractory or late-stage cancer patients. This intention is enabled by new liquid biopsy techniques whereby the reliable detection of minute amounts of tumor-derived DNA in blood can be used both to stratify patients (identify those at high risk of disease recurrence or progression even if imaging data suggests eradication of disease) and to offer a surrogate endpoint for more rapid assessment of therapeutic efficacy versus traditional clinical endpoints.
- **Enter into collaborations to realize the full potential of our platform.** The breadth of our EDGE platform enables its application to a variety of therapeutic formats, including cell therapy, bispecific antibodies and other areas where shared tumor (neo)antigens could be impactful to cancer treatment. We intend to form collaborations around certain aspects of our platform, such as shared tumor antigens, as we believe we will benefit from the resources and

capabilities of other organizations in the manufacture, development and commercialization of such diverse immunotherapies.

Immuno-Oncology and Tumor-Specific Neoantigens

Immuno-oncology is an emerging field of cancer therapy that aims to activate the immune system to enhance and/or create anti-cancer immune responses, as well as to overcome the immuno-suppressive mechanisms that cancer cells have developed against the immune system. It is now well established that the immune system can, on occasion, successfully eliminate all tumor cells, leading to long-term benefit, even cures, in some patients with solid tumors. The primary challenge in immuno-oncology is to extend this useful biology to many more cancer patients, and to do so earlier in the treatment paradigm. Understanding which cells of the immune system are critical, what they recognize on tumor cells, and why they are typically absent or ineffective in cancer patients is core to overcoming this challenge. T cells are the vital foot soldiers in the immune attack upon cancer cells. T cells have evolved to recognize “foreign” markers on cells infected by viruses, and DNA mutations, which are a hallmark of cancer, often lead to the generation of such “foreign” markers, which are different from normal or “wild-type” proteins. Exploitation of this cancer cell vulnerability using new biological and computational tools lies at the heart of our lead program.

Critical Importance of T Cells

The most critical components of the immune response to tumors are T cells, white blood cells which mature in the thymus gland. T cells can be classified into two major subsets, CD4+ T cells and CD8+ T cells, based on expression of CD4 or CD8 markers on the surface of the T cell. CD4+ T cells (also referred to as helper T cells) provide help to the immune response by secreting cytokines that enhance the activation, expansion, migration and effector functions of other types of immune cells. CD8+ T cells (also referred to as cytotoxic or “killer” T cells) can directly attack and kill cells they recognize as abnormal. An activated CD8+ T cell attacks and kills a target cell when the T cell encounters its target and the T cell receptor, or TCR, recognizes and binds to a specific protein complex on the target cell. This protein complex is comprised of a short peptide (fragment of a protein) bound to a platform molecule called, in humans, the human leukocyte antigen, or HLA, complex. This HLA/peptide complex is the antigen recognized by a T cell receptor.

One of the primary functions of T cells is to detect and eliminate normal cells that have been infected by a virus. To accomplish this, T cells are “trained” in the thymus early in life to differentiate between HLA/peptide complexes that are “self” derived (an HLA presenting a peptide derived from a normal self-protein) and those that are “foreign” or “non-self” (an HLA presenting a peptide derived from a non-self-protein such as a viral protein). When the immune system develops early in life, T cells that recognize self peptides are eliminated in the thymus to avoid the risk of an auto-immune reaction, in a process called central tolerance. T cells that recognize a non-self peptide are nurtured and sent from the thymus to patrol the body, looking for evidence of non-self markers on cells, such as virally infected cells. Because cancer cells carry DNA mutations, which may alter protein/peptide sequences, tumor cells can also present non-self peptides bound to HLA platforms on the cell surface and, as a result, can be recognized and destroyed by T cells. In this case, the DNA mutation in a tumor creates a novel non-self peptide sequence, which, if it can be recognized by a TCR, is called a tumor-specific neoantigen, or TSNA.

Tumor-Specific Neoantigens

The notion that T cells can recognize TSNA on the surface of tumor cells is well established. It is only recently, however, that tools and techniques have been developed to test this idea in humans.

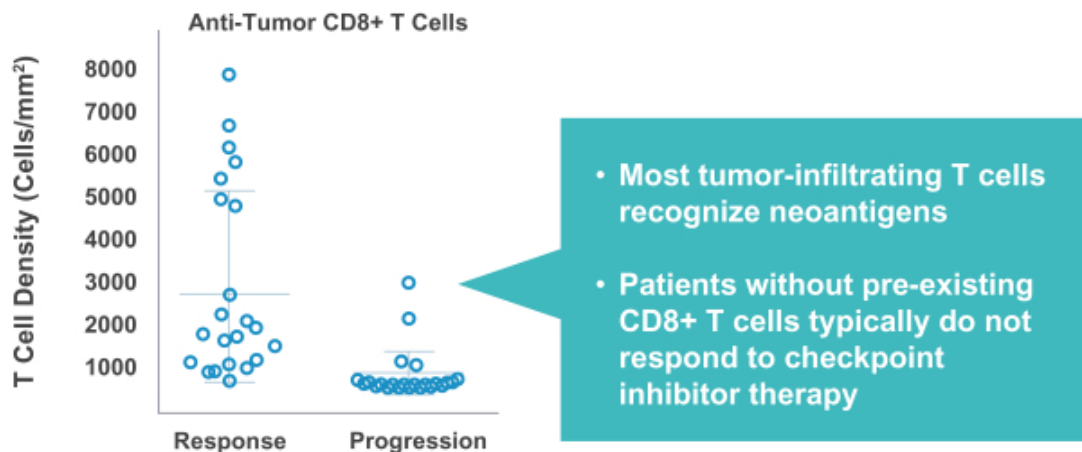
Two advances proved critical. First, the advent of checkpoint inhibitors provided cohorts of cancer patients who developed immune responses that destroyed their tumors, leading to clinical responses that could be studied at a molecular level. Second, the development of fast, inexpensive DNA and RNA sequencing techniques provided the ability to sequence and catalog tumor DNA mutations that might give rise to neoantigens. T cells from cancer patients who had responded well to checkpoint inhibitors could then be screened against candidate neoantigens to see if the patient data supported the hypothesis that T cell recognition of TSNA could kill tumor cells effectively.

In 2014 and 2015, two of our co-founders, Dr. Timothy Chan and Dr. Naiyer Rizvi, brought these two concepts together in papers demonstrating that melanoma and lung cancer patients who responded to checkpoint inhibitor therapies had developed T cells that recognized TSNA (Snyder et al., *The New England Journal of Medicine* (2014); Rizvi et al., *Science* (2015)). Further evidence from Dr. Steven Rosenberg (Center for Cancer Research) and Dr. Ton Schumacher (Netherlands Cancer Institute) demonstrated that in patients with solid tumors, T cells could be found infiltrating tumors which were specific for TSNA, and could be expanded and used therapeutically to kill tumor cells (Stevanovic et al., *Science* (2017); Schumacher and Schreiber, *Science* (2015)). Together, this body of research suggests that in patients with common solid tumors, T cells can selectively destroy tumor cells through recognition of TSNA.

Immune Evasion

While some patients do respond to checkpoint inhibitor therapy with the mobilization of T cells that recognize TSNA and kill tumor cells, such patients are in the minority (0-20% for most common solid tumors (Kiy et al., *Febs Letters* (2013))). Research into this clinical observation has shown that patients who respond to checkpoint inhibitors typically have, prior to therapy, inflamed tumors that contain infiltrating T cells (particularly cytotoxic CD8+ T cells) and that express markers of immune activation.

Figure 1. Response in Melanoma Patients Treated with Anti-PD-1 Antibody (Pembrolizumab) is Associated with Anti-Tumor T Cell Infiltration of the Tumor at Baseline*



* Adapted from Tumei et al., *Nature* (2014)

While the immune systems of these patients have recognized their tumors through the recognition of TSNA, the tumor-specific T cells have been shut down or inactivated in the tumor. Checkpoint inhibitors are capable of “re-activating” these T cells, but most patients fail to respond to checkpoint

inhibitor treatment because tumor-specific T cells are absent from the tumor due to tumor “evasion” of the patient’s immune response. We believe it is highly likely these patients have so-called “naïve” T cells in their bodies that have the ability to recognize the TSNA on tumor cells but that have not yet been activated. As a result, immune recognition, or the activation of the naïve T cells to the tumor antigen, and the generation of a large memory tumor-specific T cell response has not (yet) taken place.

Our Therapeutic Hypothesis

TSNA offer extremely attractive therapeutic targets for T cell-directed therapy because they are non-self and tumor-specific, and have been shown to function as the key T cell targets in humans responding to immune checkpoint inhibitor therapies. The fact that TSNA are non-self has several key implications:

- Every person’s existing, internal TCR repertoire of naïve T cells should be able to recognize TSNA presented by any tumor that arises within the body.
- A potent, focused T cell response against TSNA should be limited to an attack on the tumor, with minimal destruction of normal cells (off-tumor toxicity).
- TSNA are key targets for an effective human anti-tumor immune response, which means TSNA can be used therapeutically.

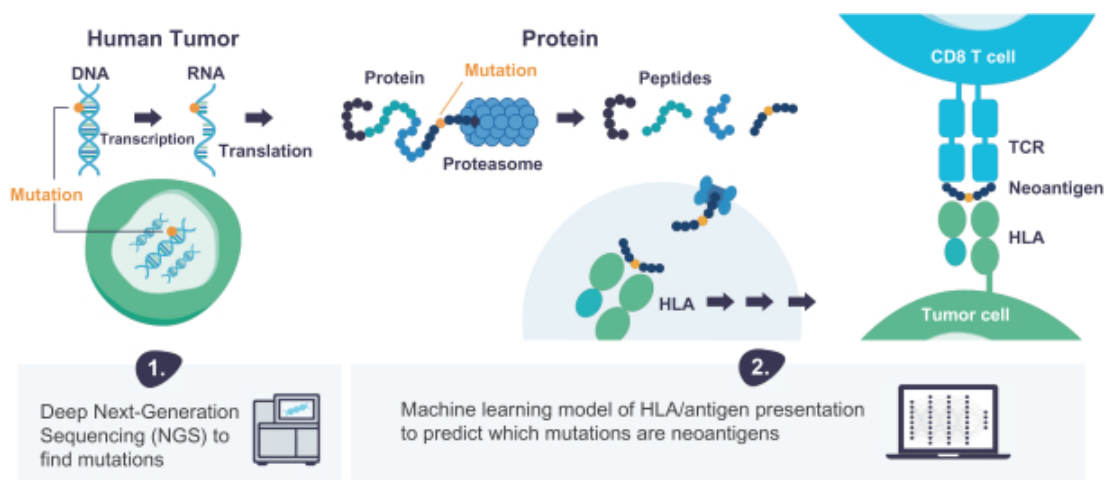
Our fundamental therapeutic hypothesis is that patients with common solid tumors often have TSNA, but the tumors have successfully evaded the patient’s immune system. Our goal is simple—to activate a potent TSNA-targeted T cell response using routine therapeutic interventions.

Our Gritstone EDGE Platform

Design of Our EDGE Platform

Neoantigens in tumors are created via a multi-step process starting with mutation in the cancer DNA, and leading to mutated peptides presented by the HLA on the surface of tumor cells. To select neoantigens for immunotherapy for cancer patients, we created our EDGE platform, which captures the essential elements of neoantigen biology via a combination of laboratory assays and computational analyses. The two steps of our EDGE platform prediction process are shown in Figure 2 below.

Figure 2. EDGE Platform



EDGE Step 1—Mutation Identification

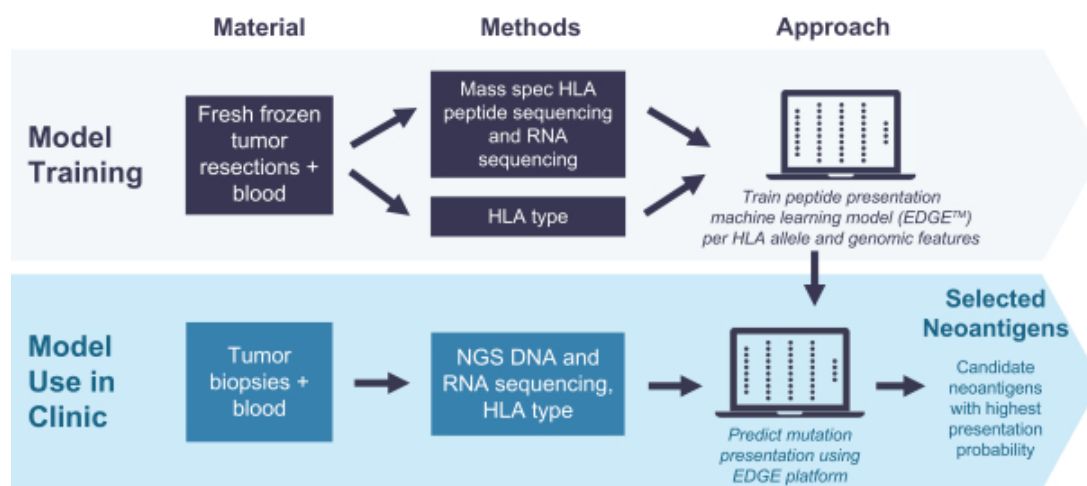
Identification of neoantigens requires accurate identification of tumor mutations and measurement of their expression levels in patient cancer specimens. To achieve this, we have built an in-house, cGMP-compliant, next-generation sequencing laboratory to perform deep sequencing of tumor DNA and RNA, as well as sequencing of the patient’s normal DNA. This first step in the EDGE process analyzes routine, core needle, formalin-fixed paraffin embedded tumor biopsies and identifies tens to hundreds of tumor mutated sequences.

EDGE Step 2—Neoantigen Prediction

Only a small fraction of tumor mutated sequences are expected to result in actual neoantigens presented on the surface of tumor cells. This fraction may be as low as approximately 1% of all mutations. To accurately predict which neoantigens will be presented on the surface of tumor cells, we have generated a large dataset of HLA/peptides from human tumor and matched normal tissue specimens. Our process isolates and sequences HLA/peptides, using an immunopeptidomic mass spectrometry approach. We also analyze tumors for level of RNA expression of all genes. Our dataset now comprises more than 300 resected tissue specimens, spanning lung, colon, ovarian and gastric cancers from patients of various ancestries to ensure broad coverage of diverse patient HLA types. Each tumor specimen yields thousands of HLA/peptides and the total dataset has now grown to over one million HLA-presented peptides.

We use a subset of these and selected published peptide datasets to train a machine-learning model for neoantigen prediction in our EDGE platform. The model learns the critical DNA/RNA sequence features and other factors like RNA expression that lead to a greater likelihood of peptide presentation by the HLA. Our EDGE model analyzes mutated peptides in turn and calculates the probability that the peptide will be presented by the patient’s HLA on the surface of the tumor cell, or HLA-presented peptides. We prioritize mutations with the highest probability of presentation for inclusion in that patient’s personalized immunotherapy. The EDGE model training and clinical application are illustrated in Figure 3 below.

Figure 3. EDGE Model Training and Application



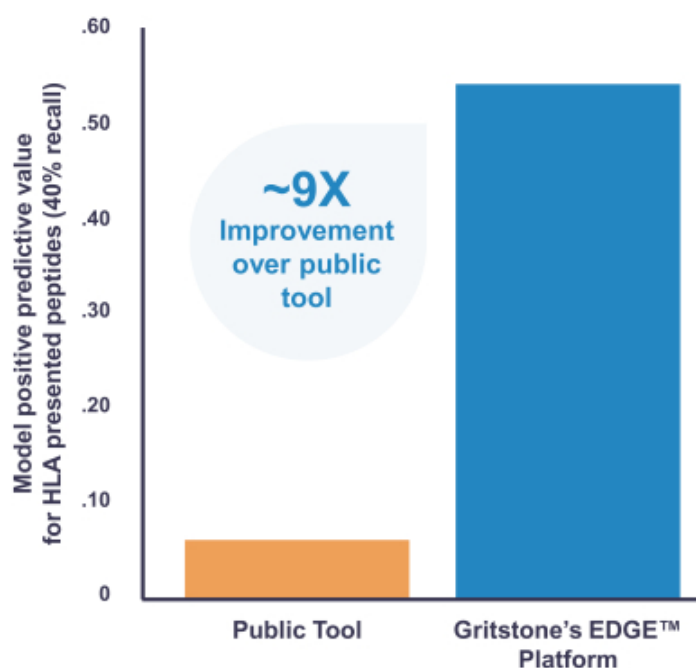
EDGE Neoantigen Prediction Performance

Accurate TSNA prediction is critical for our personalized immunotherapy, and we have evaluated the prediction performance of our EDGE model in two ways. First, we assessed the ability of the EDGE model to predict HLA presented peptides. We then tested whether the ability to predict HLA presented peptides translated into the ability to predict which mutations give rise to neoantigens with tumor-relevant T cell responses in patients.

Prediction of HLA-Presented Peptides

To assess EDGE model performance for prediction of HLA presented peptides, we used five tumor samples with HLA/peptides measured by mass-spectrometry that were not included in model training. For these test specimens, we predicted which peptides are likely to be presented on the tumor cell surface. We evaluated the quality of our predictions by calculating the positive predictive value, or PPV, which is the fraction of predicted peptides that were detected on the tumor HLA. As a benchmark, we compared performance of our prediction to that of publicly available tools (such as MHCflurry or NetMHC). Averaged over the test samples, our EDGE platform achieved a PPV of 54%, representing a nine-fold improvement over standard methods, as shown in Figure 4 below. We believe that TSNA selected by our EDGE platform have a much higher likelihood of being useful targets for immunization than those selected using industry standard methods.

Figure 4. Performance of EDGE Model for HLA/Peptide Prediction

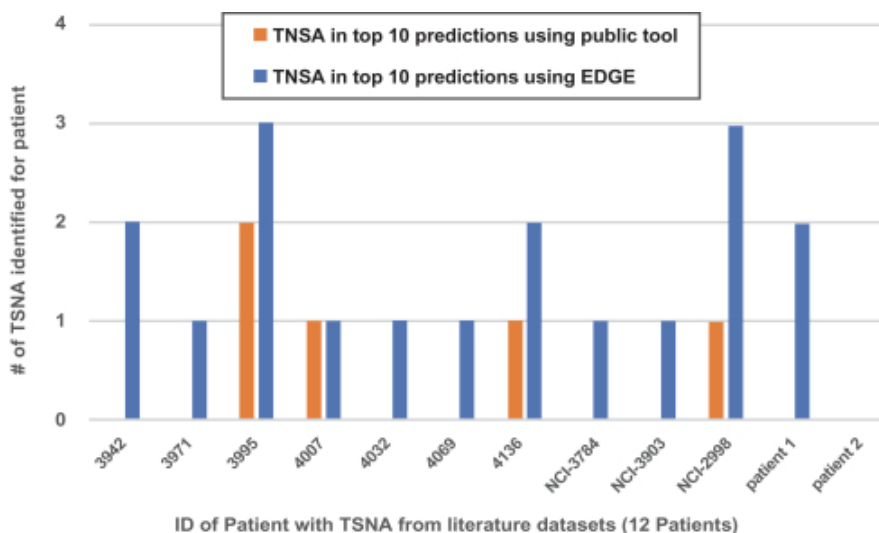


Prediction of TSNA with T Cell Responses in Patients

To show that our prediction of HLA/peptide presentation enables prediction of tumor-specific neoantigens that can be targeted by T cells in patients, we assembled a test set of independently validated, published neoantigens. The dataset comprised four separate studies in the literature, with over 2,000 mutations from 17 patients with melanoma, gastro-intestinal cancer and breast cancer, comprehensively analyzed for anti-tumor immune response using either tumor-infiltrating lymphocytes, or TILs, or activated T cells from the blood. In these studies, 12 of the 17 patients exhibited pre-existing T cell responses, with 26 neoantigens identified. Applying our EDGE model to select the top ten mutations for each patient from DNA/RNA sequence alone, we found that 11 out of the 12 patients with tumor-specific neoantigens had at least one neoantigen identified. In contrast, a standard approach identified true neoantigens for only four patients.

These results are illustrated in Figure 5 below.

Figure 5. EDGE Platform Identification of TSNA for Immunization in 12 Patients

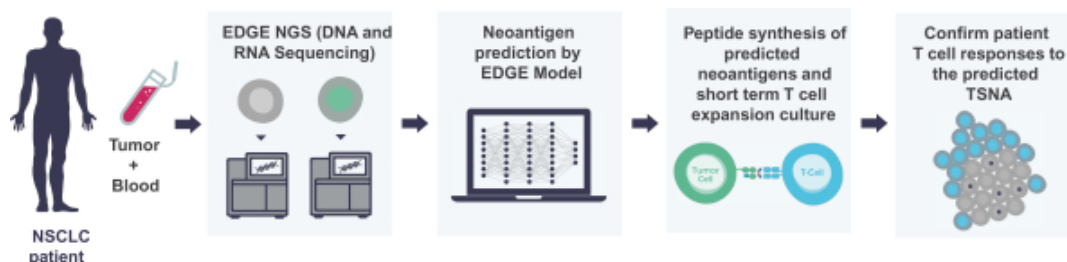


Applying our EDGE model to select the top twenty mutations for each patient, we found that a majority (19 of 26, 73%) of the tumor-specific neoantigens were included.

Ongoing EDGE Platform Validation

To further validate our EDGE platform's ability to identify TSNA in patients, we are also analyzing peripheral blood obtained from NSCLC patients receiving PD-(L)1 checkpoint inhibitors in an observational clinical study, wherein T cell recognition of predicted TSNA is assessed. This process is shown in Figure 6 below.

Figure 6. Gritstone Analysis of Neoantigen T Cell Responses in NSCLC Patients



Initial data from this study have shown that our EDGE platform identified TSNA-specific T cells in a majority (5 of 9, 56%) of NSCLC patients tested, with an average of two peptides recognized per patient in patients with detectable TSNA-specific T cells.

Genomic and immune response data from our clinical trials will serve to further validate and refine our EDGE platform.

Our Personalized Tumor-Specific Neoantigen Therapy

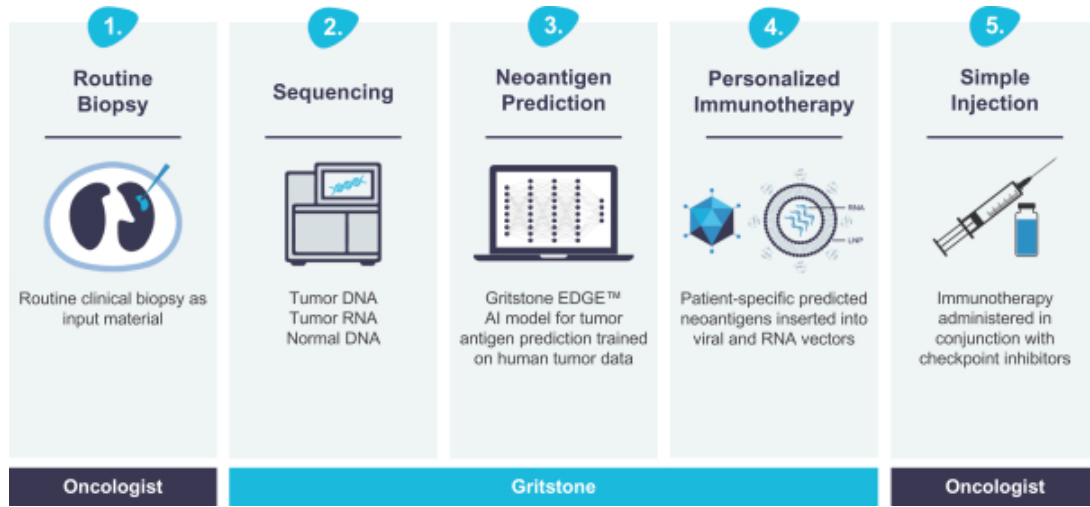
Overview

Our therapeutic hypothesis is that treatment with personalized TSNA-containing vectors combined with immune checkpoint inhibitor therapy will generate *de novo*, or augment existing, selective, TSNA-specific T cell response, unleashing the natural power of the immune system on tumor cells, potentially improving efficacy without a substantial increase in off-tumor toxicity. Our personalized immunotherapy candidate is designed to fit easily into a community oncology setting and to be administered in earlier lines of treatment rather than only in refractory or relapsed cancers. We have designed our personalized immunotherapy candidate such that oncologists will not have to alter their treatment practices, and we believe that this will extend the utility of our medicines into the community setting and not limit their use to scarce centers of excellence. We believe that as a result of its design, our personalized immunotherapy candidate has the potential to expand the efficacy of immunotherapy into broader patient populations.

Our Personalized Immunotherapy Process

Our personalized immunotherapy process leverages our proprietary EDGE platform to predict the TSNA that will be presented on a patient's tumor, allowing us to create a patient-specific heterologous prime-boost immunotherapy that is designed to elicit a potent anti-tumor T cell response. This process is outlined in Figure 7 below.

Figure 7. Gritstone's Personalized Immunotherapy Process



Step 1—Routine Biopsy

Most cancer care takes place in a community oncologist's office rather than an academic center, and we believe products should ideally be designed to be usable in these settings. We are designing and developing our product candidate for administration early in the cancer treatment paradigm, particularly where disease burden is low and a cure is perceived to be more likely. Such early care is also heavily weighted to the community oncologist setting. Consequently, our product development process necessarily begins with a routine biopsy to obtain a specimen of the tumor with a standard needle biopsy performed by an oncologist or radiologist.

Step 2—Sequencing

We then apply customized deep-sequencing and bioinformatic processes in-house to the patient's tumor biopsy specimen and blood to derive high-quality DNA and RNA sequence information and identify tens to hundreds of tumor mutations.

Step 3—Neoantigen Prediction

This tumor mutation sequence data is then entered into our proprietary EDGE platform. Our evolving artificial intelligence platform then predicts the TSNA most likely to be presented on the tumor cell surface.

Step 4—Personalized Immunotherapy

We assemble the predicted TSNA into a patient-specific "cassette." The cassette is incorporated into our heterologous prime-boost personalized immunotherapy, which is manufactured and filled into a vial.

Step 5—Simple Injection

The vial is then shipped to the oncologist’s office where it is delivered to the patient by simple intramuscular injection. Our personalized immunotherapy candidate is designed to be administered in combination with standard checkpoint inhibitors to drive large numbers of TSNA-specific T cells to the tumor site, where they remain active.

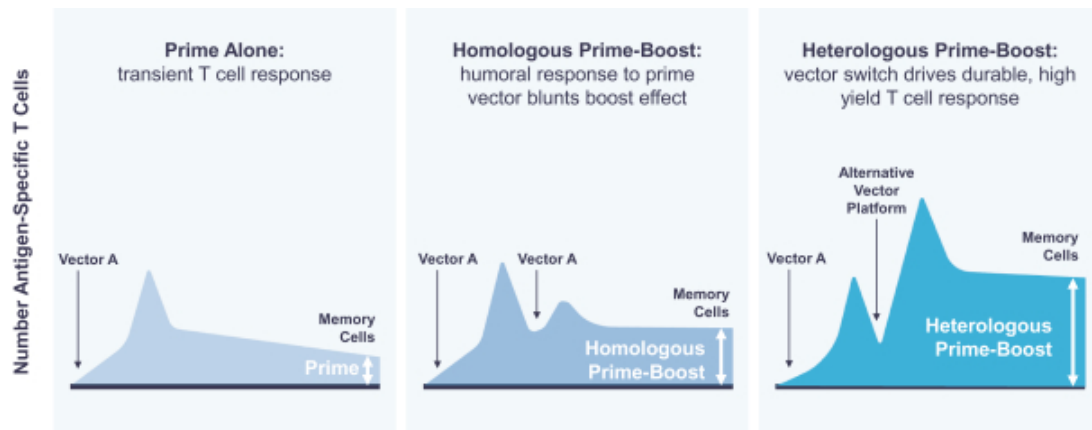
Our Lead Product Candidate (GRANITE-001)

Our therapeutic goal is to drive a large and sustained T cell response against all TSNA presented on a patient’s tumor. Cancer patients may have pre-existing memory T cells directed against some of the TSNA delivered within the neoantigen cassette in their personalized immunotherapy. Boosting such pre-activated TSNA-specific T cells requires less antigen-specific stimulation than priming naïve T cells that have not yet been activated against their respective neoantigen. Importantly, early clinical data in the field suggest that for the majority of TSNA within the immunotherapy cassette, priming naïve T cells will be required to mount a large immune response. Priming naïve T cells is a multi-step process that requires a potent antigen delivery platform able to deliver cassette neoantigens in a highly immunogenic manner.

Human infectious disease vaccine experience has taught us that delivering antigens within an adenoviral vector can prime a substantial T cell response consisting of cytotoxic CD8+ T cells and CD4+ T-helper cells. We believe an adenoviral vector is one of the most potent antigen-delivery platforms to prime naïve T cells. Peptide vaccination has not been able to accomplish this goal.

We believe that continued immune pressure upon the tumor is likely necessary to prevent immune escape by the tumor and drive a durable clinical response. To sustain high numbers of tumor-specific T cells, the same tumor-specific antigen can be given in a different vector from that used to prime, as a boost immunization. This heterologous prime-boost concept has been shown to activate and sustain high antigen-specific T cell responses, as shown in Figure 8 below.

Figure 8. Comparison of Heterologous Prime-Boost with Homologous Prime-Boost and Prime Alone



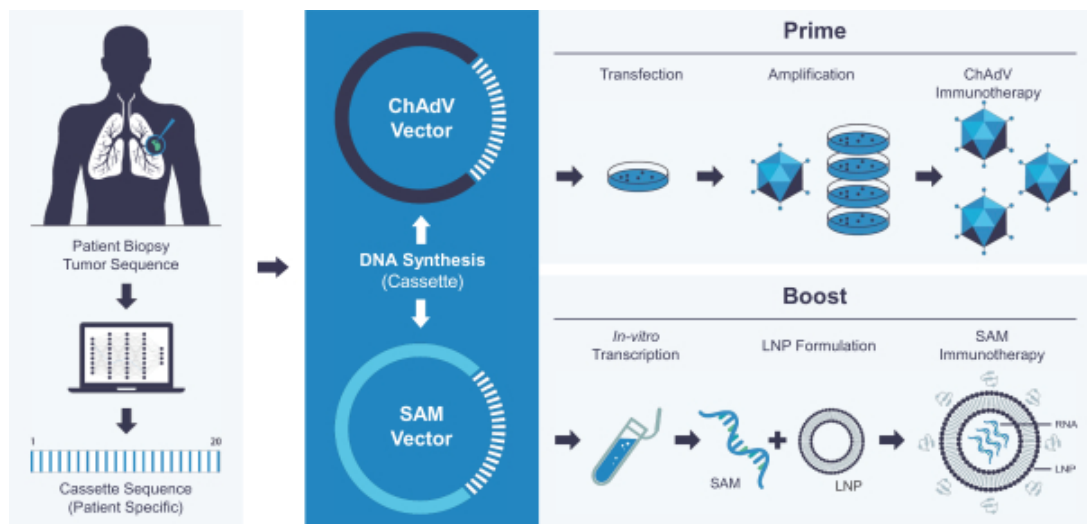
Our Construct

Our personalized immunotherapy candidate consists of (1) a prime vector and (2) a boost vector, both of which contain (3) the same personalized “cassette” containing the top-20 predicted patient-specific neoantigens:

1. *Prime Vector.* The prime vector is a chimpanzee adenovirus, or ChAdV. There is extensive clinical experience with the ChAdV vector platform in infectious disease studies over the last 20 years demonstrating that ChAdV vectors are well tolerated and consistently generate rapid and substantial CD4+ and CD8+ T cell responses that have been shown, in a Phase 2b randomized controlled trial, to protect humans against infections such as malaria.
2. *Boost Vector.* The boost is a self-amplifying mRNA, or SAM, formulated in a lipid nanoparticle, or LNP. A SAM vector comprises RNA that encodes the selected target antigens, such as TSNA, plus an RNA polymerase. After injection into muscle and uptake into host cells, the RNA is translated into protein, and the RNA polymerase starts to replicate the originally injected source RNA, amplifying the number of copies within the cells dramatically. This leads to production of large amounts of the delivered target antigens. During the RNA replication, RNA structures that are foreign to a normal cell are generated, which drives a strong danger signal to surrounding immune cells, triggering an early immune reaction (innate immune response). The presence of large quantities of antigen in an immune-stimulating environment drives profound antigen-specific T cell responses (adaptive immune responses). This approach is fundamentally distinct from using mRNA, which does not possess these attractive properties.
3. *Personalized Cassette.* Within each of the two vectors used for the prime and boost immunizations, we include a cassette that is the only personalized component of the process. This cassette contains the top-20 predicted patient-specific TSNA. The same neoantigen cassette is used for both prime and boost vectors for each patient. We have designed the cassette to contain 20 TSNA based on several considerations, including TSNA prediction performance, potential immune competition and manufacturing factors.

The prime and boost immunotherapy construction is depicted in Figure 9 below.

Figure 9. Prime and Boost Immunotherapy Construction



Our current manufacturing process includes Gritstone and qualified third-party contract manufacturing organization, or CMO, sites that are designed to operate under cGMP requirements. The manufacturing process starts when tumor samples are received by our sequencing lab in Cambridge, Massachusetts. Our EDGE platform is used to select 20 appropriate genetic sequences for neoantigen manufacturing, and a qualified CMO inserts these genetic sequence cassettes into standard plasmid backbones. The ChAdV vector, which encodes the genetic sequence in the cassette, is sent to our Pleasanton, California facility for manufacturing the prime immunotherapy, and the SAM vector, which encodes the genetic sequence in the cassette, is sent to a qualified CMO for manufacturing the boost immunotherapy. This end-to-end process, from biopsy receipt to shipment of the personalized heterologous prime-boost immunotherapy to the clinical site for patient administration, will initially take approximately 16-20 weeks. This period is consistent with the stated production and release times for other personalized immunotherapy approaches (mRNA or peptide) described in the literature and, importantly, acceptable for deployment in early treatment of cancer patients in the adjuvant setting where clinical urgency is lower as compared to the relapsed or refractory late stage setting in which adoptive T cell therapy may be utilized.

The ability to control the manufacturing of a high-quality personalized immunotherapy product, and scale production if early data are positive, is critical for efficient clinical development and commercialization. Our goal is to internalize the majority of the manufacturing steps to drive down both cost and production time, as well as establish full control over intellectual property and product quality. We have invested significant resources in our Cambridge, Massachusetts sequencing lab and our Pleasanton, California manufacturing facility to address these needs and to position us to control the critical steps in our personalized immunotherapy product production.

Our Preclinical Non-Human Primate Data

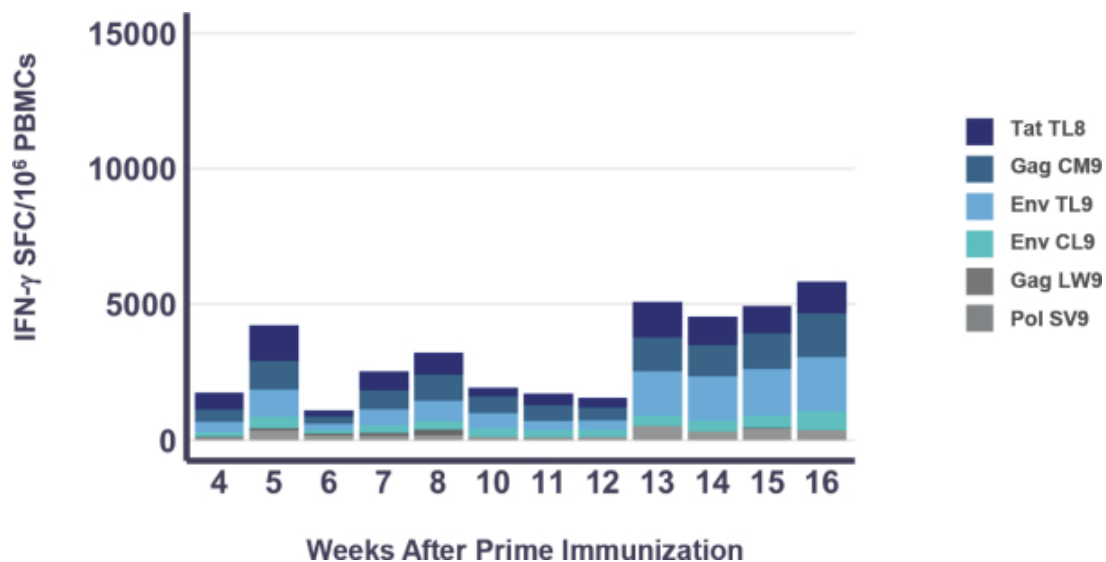
Our goal is to drive a large and sustained TSNA-specific T cell response to control tumor growth and/or eradicate the tumor. Published data from adoptive T cell therapies provide preliminary guidance on clinically efficacious T cell levels in patients. These studies suggest that T cell levels of approximately 10,000 antigen-specific T cells per milliliter of blood measured in patients four weeks post-infusion indicate clinical benefit.

We have focused our preclinical program on assessing the potency of our immunotherapy candidate in non-human primates, or NHPs, because published data suggests that NHPs' immune responses to our immunotherapy candidate will better predict human data than murine models due to the comparative similarities between NHP and human immune systems. Preclinical and clinical studies have shown that T cell responses induced in NHPs were predictive of responses in human clinical trials—the same relative potency was observed for different vaccinations in NHPs and humans. In these studies, a small 1.5- to three-fold decrease in absolute T cell response was measured when comparing NHPs to humans. By contrast, murine models, while simple, have been shown to be less likely to predict outcomes of cancer immunotherapy in humans, believed to be due to the many differences in immune system components between humans and mice.

We have completed one preclinical study and are currently conducting another preclinical study in NHPs to demonstrate the ability of our heterologous prime-boost immunotherapy approach to prime a potent immune response against the non-self model antigens delivered within the cassette. We constructed ChAdV and SAM vectors encoding viral, non-self model antigens because NHPs do not have tumors or TSNA. We collected blood samples, which include T cells, throughout the studies pre- and post-immunization to measure the kinetics and level of T cell responses specifically directed against the model antigens. T cells were isolated from the blood and the number of antigen-specific T cells are reported as spot forming cells, or SFCs, per 10^6 peripheral blood mononuclear cells, or PBMCs, which is a measure of the number of antigen-specific cytokine secreting cells (typically T cells) in an NHP. CD8+ T cells comprise one of the critical fractions of T cells quantified with this T cell assay.

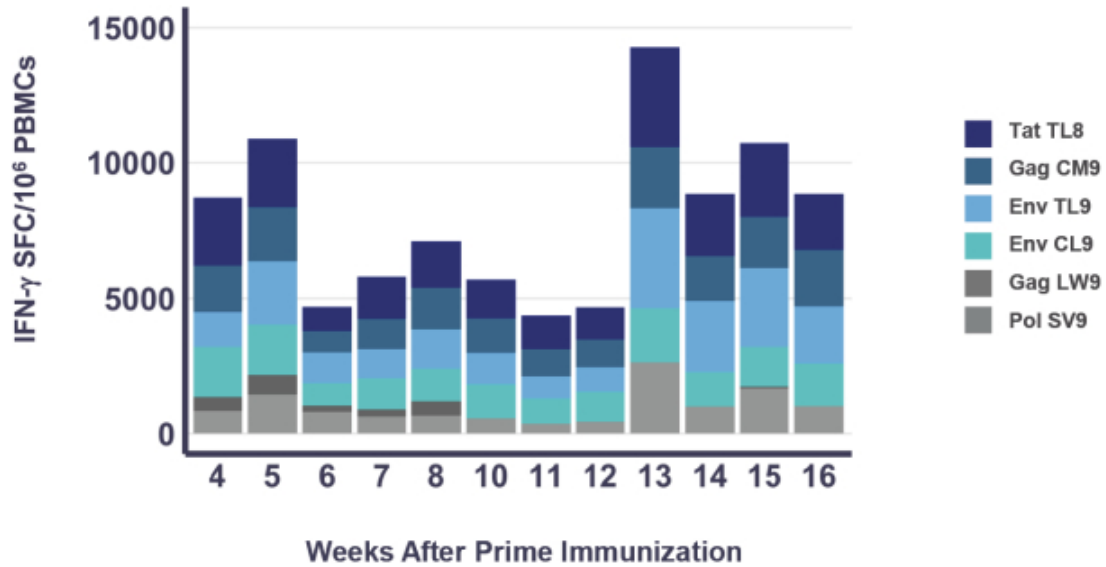
In our experiments, the NHPs immunized with ChAdV showed a rapid priming of T cell responses that peaked 14-21 days after immunization with combined immune responses to all six non-self model antigens of approximately 2,000 SFCs per 10^6 PBMCs. These data are consistent with immune responses reported in the literature for adenoviral vectors. Administration of a SAM boost, four weeks after the ChAdV prime, increased T cell responses approximately two-fold, with combined immune responses to all six non-self model antigens of approximately 4,000 SFCs per 10^6 PBMCs measured seven days after the SAM boost, as shown in Figure 10 below. These T cell responses increased further after a second SAM boost at week 12, to around 5,000 SFCs per 10^6 PBMCs and were maintained at these levels for four weeks without further boosts. T cell responses to each individual antigen were broadly comparable in magnitude for four of the six antigens administered. We anticipate that this breadth of T cell response against multiple antigens delivered within the cassette will be essential for the control of tumors within a patient.

Figure 10. Immune Response in NHPs to Heterologous Prime-Boost Immunotherapy Without Co-Administration of Checkpoint Inhibitors



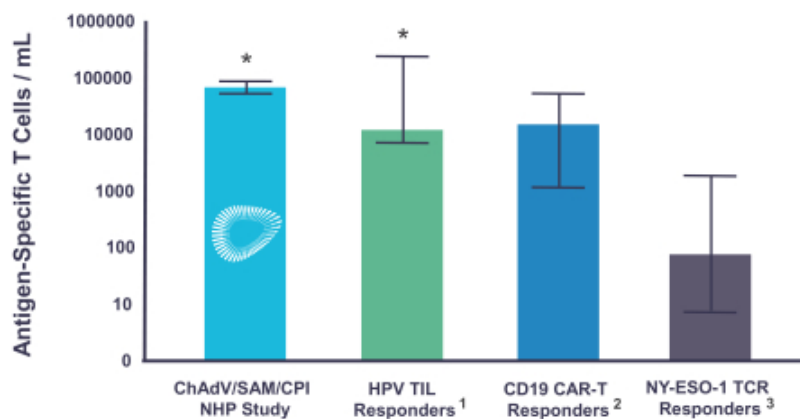
The literature suggests that the addition of immune checkpoint inhibitors increases T cell expansion when combined with a vaccine. To study this concept, we administered our immunization to NHPs in combination with the checkpoint inhibitor anti-CTLA-4. Co-administration of anti-CTLA-4 monoclonal antibodies, or mAb, with the ChAdV immunotherapy significantly increased ChAdV priming with a combined T cell response of approximately 7,500 SFCs per 10^6 PBMCs observed four weeks after immunization, as shown in Figure 11 below. The SAM boost administered four weeks after the prime immunization with anti-CTLA-4, increased the antigen specific T cell response further, reaching T cell levels greater than 10,000 SFCs per 10^6 PBMCs. A second SAM boost in combination with the anti-CTLA-4 antibody given eight weeks after the first boost immunization expanded the antigen-specific T cells further to peak levels reaching greater than 14,000 SFCs per 10^6 PBMCs one week after the boost which were maintained at levels between 9,000-10,000 SFCs per 10^6 PBMCs for several weeks. Thus, our heterologous prime-boost immunotherapy approach induced T cell numbers between 5,000-14,000 SFC per 10^6 PBMCs that were sustained over 16 weeks.

Figure 11. Immune Response in NHPs to Heterologous Prime-Boost Immunotherapy in Combination with Checkpoint Inhibitor Anti-CTLA-4



In order to compare the number of robust antigen-specific T cells induced by our heterologous prime-boost approach in NHPs directly to the literature data from adoptive T cell therapies, we converted our units of SFCs per 10^6 PBMCs to units of CD8+ T cells per milliliter of blood and plotted them against the T cell data from various clinical studies (which we also converted, where necessary, to T cells per milliliter of blood). One milliliter of blood is estimated to contain around three million PBMCs. The comparative data suggest that the antigen-specific CD8+ T cell numbers reached with our immunotherapy in NHPs (shown in the leftmost bar of Figure 12 below) is in the range of the T cell levels achieved in cancer patient clinical responders to adoptive T cell therapies (shown in the three rightmost bars in Figure 12 below), even when anticipating a 1.5- to three-fold decrease in the number of T cells induced in humans versus NHPs (as noted in the literature). Such substantial T cell numbers have not, to our knowledge, been reached with a therapeutic cancer vaccine in clinical studies to date. Furthermore, in addition to priming numerically substantial T cell responses against the cassette neoantigens, our immunotherapy regimen has been shown to induce T cells of high functional quality in NHPs, with a cytokine secretion profile seen in highly functional and cytotoxic T cells.

Figure 12. Comparison of Number of T Cells Induced by Our Immunotherapy in NHPs to Number of T Cells Observed in Clinical Responders to Adoptive T Cell Therapies



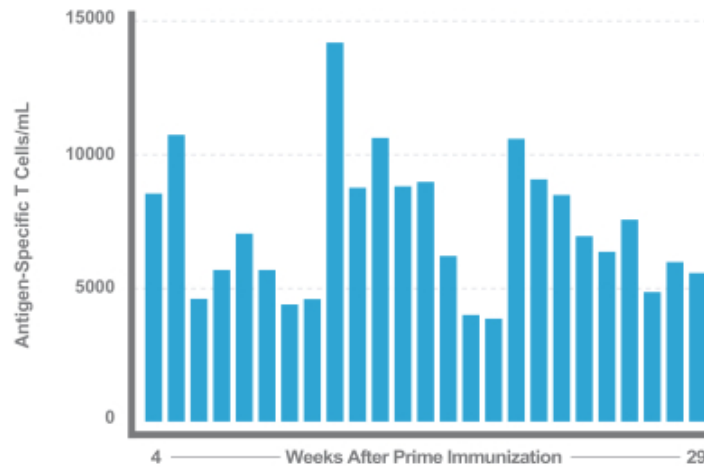
Estimated from ELISpot data
Bars represent min. and max. values

Data derived from:

1. Stevanovic et al., J Clin Onc. (2015)
2. Lee et al., Lancet (2015)
3. Robbins et al., Clin Cancer Res. (2015)

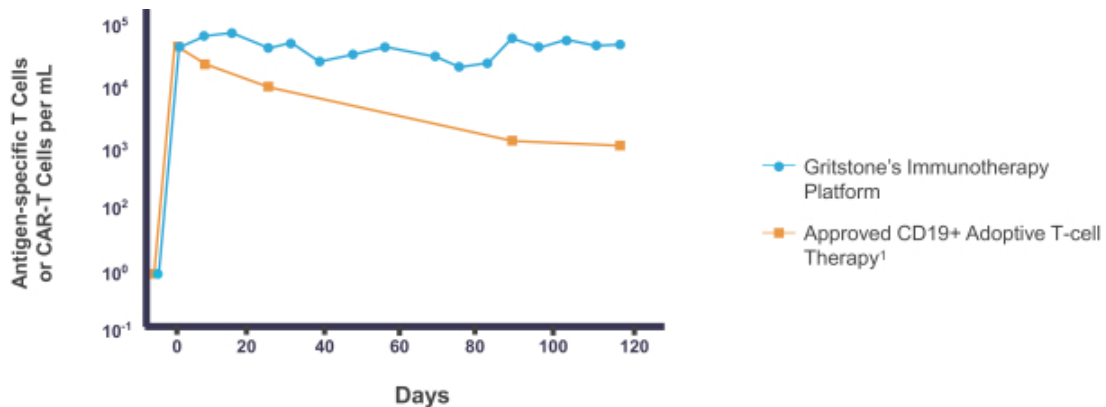
We believe that continued immune pressure upon the tumor is likely necessary to prevent immune escape by the tumor and consequently drive a durable clinical response. High T cell titers persisting for at least six months were induced by the heterologous prime-boost immunotherapy approach in combination with anti-CTLA-4, as shown in Figure 13 below.

Figure 13. Gritstone's Immunotherapy Platform ChAdV + SAM + anti-CTLA-4



To compare the durability of the T cell responses induced with our heterologous prime-boost immunotherapy approach in NHPs to the persistence of T cells post adoptive T cell therapy in humans, we plotted our T cell data over time against the data described in the literature of a recently approved CD19-specific adoptive T cell therapy. The data in Figure 14 below show that T cell numbers induced in NHPs with our heterologous prime-boost immunotherapy were more durable over a period of four months than T cell numbers observed over the same period in humans who responded to adoptive T cell therapy.

Figure 14. Comparison of Duration of T Cells Observed in NHPs with Gritstone's Immunotherapy Platform to An Approved CD19 Adoptive T Cell Therapy



*GRANITE-001 + anti-CTLA-4 in non-human primates

¹Neelapu, *NEJM* (2017)

Safety

We have performed a ten-week GLP toxicity evaluation of the ChAdV and the SAM prime-boost in NHPs to assess safety. The heterologous prime-boost immunotherapy, when administered intramuscularly, was well tolerated at the clinical maximal dose of each therapy.

Our Clinical Development Strategy

We are employing an innovative and flexible clinical study design in an effort to execute a potentially faster-to-market strategy in a rapidly evolving and competitive treatment landscape. In order to accelerate the execution of our Phase 1 and Phase 2 program, we intend to use a seamless Phase 1/2 trial design. A seamless design refers to an integrated Phase 1 and Phase 2 trial protocol that allows rapid transition following dosing and tolerability confirmation during the Phase 1 portion to establishing proof-of-concept in the Phase 2 cohort expansion portion without compromising patients' safety or incurring delay for analysis or approval. Data obtained from this Phase 1/2 trial will inform the design and initiation of Phase 2/3 studies with registrational intent in the metastatic and adjuvant settings in specific tumor types, for both GRANITE-001, our personalized tumor-specific immunotherapy product candidate, and SLATE-001, our shared tumor-specific immunotherapy product candidate. Advanced NSCLC and gastroesophageal, bladder and MSS colorectal cancers are the initial indications for the Phase 1 portion of our GRANITE-001 initial trial. These indications have been selected for several reasons, including high mutational load, response to checkpoint inhibitors, large patient populations, manufacturing time, emerging treatment landscape, regulatory pathway, the ability to combine personalized immunotherapies with immune checkpoint inhibitors and the opportunity to generate *de novo* immune responses and/or amplify existing anti-tumor T cell responses in order to improve the depth and durability of clinical responses.

Our Planned Phase 1/2 Trial (GO-004)

In the second half of 2018, we intend to submit our IND for our lead product candidate, GRANITE-001, and, upon acceptance, to initiate our first-in-human, Phase 1/2 trial, which we refer to as GO-004, with investigation of intramuscular heterologous prime-boost immunization with ChAdV and SAM in combination with mAb to PD-1 and CTLA-4. Our Phase 1/2 trial will enroll newly diagnosed, advanced lung, gastric and bladder cancer patients who are receiving first-line chemotherapy treatment. Production of the immunotherapy will take place while patients are receiving their initial chemotherapy, and we will administer our experimental, personalized immunotherapy candidate in combination with checkpoint inhibitors as either maintenance therapy or second-line therapy. We will also include relapsed colorectal cancer patients with MSS tumors whose responses to current immunotherapies are trivial (Le et al., *NEJM* (2015)) and who have been predicted to have adequate TSNA to merit inclusion in our program. We will exclude patients who have large neoantigen loads and are well served by currently approved immunotherapy, such as melanoma patients and those with colorectal cancer and microsatellite instability. The Phase 1 portion of our seamless Phase 1/2 trial will seek to establish a dose for further investigation in Phase 2 and to evaluate safety, tolerability and, importantly, immunogenicity of our lead product candidate. Efficacy signals may not be observed nor be interpretable during the Phase 1 portion. Thus, we will seek to further evaluate efficacy and safety in the Phase 2 cohort expansion portion in several common solid tumor types.

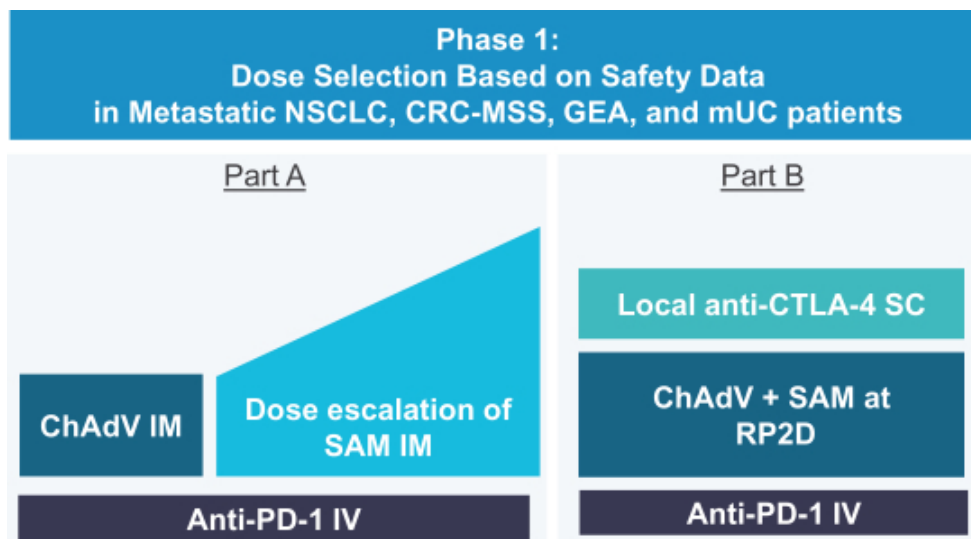
We believe co-administration of checkpoint inhibitors with personalized immunotherapy is a rational way to augment the T cell response and potential efficacy of the therapeutic regimen. Use of mAb to PD-1 is believed to unleash T cells which have been functionally silenced in tumor tissue by local PD-1 expression. Administration of antagonistic mAb to CTLA-4, an early inhibitory marker of T cell activation, has been shown to broaden the T cell response. Local subcutaneous administration of anti-CTLA-4 provides high drug concentration in the vaccination site-draining lymph node while

minimizing systemic exposure, which we believe will optimize the benefit-risk ratio of our experimental regimen. We will be provided with checkpoint inhibitors by our collaborator, BMS.

The Phase 1 portion of GO-004 will consist of two parts. All patients will receive anti-PD-1 intravenously. Part A of the Phase 1 portion of GO-004 will first examine the safety, tolerability, dose, immunogenicity and early efficacy of the initial administration of ChAdV as a prime succeeded by multiple dose levels of SAM boosts (heterologous prime-boost); Part B will consist of the co-administration of subcutaneous anti-CTLA-4 with ChAdV prime and SAM boosts at the dose established at the end of Part A. Depending upon accrual rate and safety signals, we expect to receive preliminary efficacy data by the end of 2019.

Figure 15 below illustrates the Phase 1 portion of our Phase 1/2 trial design (GO-004).

Figure 15. Phase 1 Portion of Phase 1/2 Design (GO-004)



CRC-MSS, microsatellite stable colorectal cancer; NSCLC, non-small cell lung cancer; mUC, metastatic urothelial cancer; GEA, gastroesophageal adenocarcinoma; ChAdV, Chimpanzee Adenovirus; SAM, self-amplifying mRNA; IM, intramuscular; IV, intravenous; SC, subcutaneous; RP2D, recommended phase 2 dose

Upon completion of the Phase 1 portion of GO-004, we will aim to demonstrate proof-of-concept in the Phase 2 portion where we will administer the heterologous prime-boost regimen in combination with intravenous anti-PD-1 mAb and subcutaneous anti-CTLA-4 at the recommended Phase 2 dose established during Phase 1. The Phase 2 portion of GO-004 will consist of single-arm expansion cohorts in "cold" tumors where checkpoint inhibitors alone have very low efficacy (such as MSS colorectal cancer), and potentially randomized cohorts in typically more inflamed tumors (such as lung, gastric or bladder cancer), where checkpoint inhibitors are known to have some activity. We will also assess the efficacy of a SAM homologous prime-boost immunotherapy regimen in different tumor types.

We hypothesize that personalized immunotherapy should ideally be administered in earlier lines of treatment, in the context of minimal residual disease and an optimal immune system. Depending on

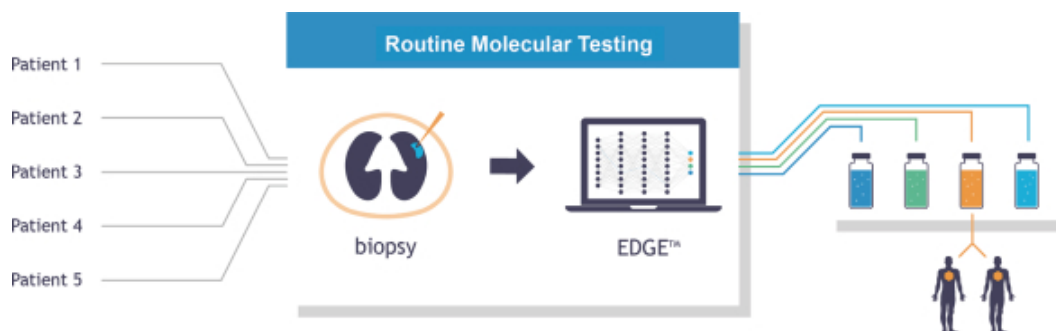
the safety profile observed during the Phase 1 portion of GO-004 and in parallel to single-arm cohort expansions in the Phase 2 portion of GO-004, we are considering options to conduct randomized Phase 2 trials in stage III unresectable tumors, such as lung cancer, where our personalized immunotherapy would be used as consolidation following first-line chemo-radiotherapy. Likewise, in patients with tumors at very high risk of relapse following complete surgical resection, such as patients with triple-negative breast cancer, colorectal cancer, squamous cell carcinoma of the head and neck, or ovarian cancer, we may use our personalized immunotherapy candidate in the adjuvant setting to prevent recurrence of their disease. In this particularly challenging setting, we plan to use cell-free (circulating) DNA, or cfDNA, to detect the presence of remaining tumor cells following surgery and during adjuvant immunotherapy. We believe cfDNA technology will soon be accepted by investigators and health authorities as a validated surrogate endpoint of efficacy alongside well-established clinical endpoints, such as metastasis-free survival, progression-free survival and overall survival.

Throughout our clinical development, we will closely monitor the generation of T cells both in the blood and infiltrating the tumor microenvironment, and determine differences in the mutational and neoantigen profile of cfDNA from a patient at multiple time points during chemotherapy and immunotherapy along with additional blood- and tumor-based biomarkers including, but not limited to, serum cytokines and circulating immune cells, gene expression profiling for immune-related and tumor-related proteins, immune cell infiltration and composition and sequencing of the TCR on TILs.

Off-The-Shelf Neoantigen-Directed Immunotherapy Product (SLATE)

Our personalized immunotherapy product, GRANITE-001, is an attractive approach to neoantigen-directed immunotherapy for the largest possible number of cancer patients. A key question in the field is whether there are neoantigens which are shared by multiple patients and may thus be used to design an off-the-shelf neoantigen-directed product for a particular subset of patients with these shared neoantigens. Using our EDGE platform, we are identifying certain neoantigens arising from genes which are recurrently mutated in cancer because their function can be altered in a cancer-promoting manner. Such mutations are termed driver mutations, and they are well characterized given their importance as functional drug targets. Examples include activating mutations in KRAS or EGFR genes which drive cell proliferation and/or growth, and inactivating mutations in genes such as TP53 and APC which normally limit DNA damage or cell proliferation, respectively. As noted above, the existence of a neoantigen is determined by the combination of a mutated peptide and the presenting HLA molecule. It has been demonstrated that a common KRAS mutation (G12D), often found in colorectal cancer, could be processed by tumor cells and presented as a functional neoantigen by tumor cells carrying the HLA-C*08:02 protein. This combination of KRAS mutation and HLA is estimated to be found in 1-2% of colorectal cancer patients. KRAS mutations are also common in lung and pancreatic cancers.

Building on this observation, we have applied our EDGE antigen prediction model to common tumor driver mutations and predicted a large set of candidate shared neoantigens. Early analyses suggest that while each such shared neoantigen may only be found in less than 2% of patients with a particular tumor type, our heterologous prime-boost can deliver at least 20 of these TSNA, which we believe will result in the off-the-shelf product having an addressable population of approximately 10-15% of patients within common solid tumor types such as colorectal cancer and lung cancer. Our off-the-shelf product candidates, the first of which in development is SLATE-001, are expected to be specific to a particular tumor type, and the TSNA cassette is fixed for each product. The process for determining which patients are eligible for SLATE therapy is illustrated below in Figure 16.

Figure 16. Gritstone's Off-the-Shelf Immunotherapy Platform, SLATE-001

While our off-the-shelf SLATE product candidate series utilizes the same heterologous prime-boost system as GRANITE-001, the viral prime and RNA boost contains a fixed TSNA cassette that is designed for the subset of patients who carry the relevant antigens and HLA types. Given the commonality between GRANITE-001 and our SLATE product candidate series, we expect that there will be no additional pre-clinical work required for a particular SLATE product candidate to enter clinical testing following the Phase 1 portion of GRANITE-001's Phase 1/2 clinical trial. We also expect to investigate clinical combinations of SLATE product candidates with immune checkpoint inhibitors and are expecting to file an IND in mid-2019 and, if accepted, to enter human clinical trials for SLATE-001 in the second half of 2019. Depending upon accrual rate and safety signals, we expect to receive preliminary efficacy data by the end of 2020. Based on the importance of KRAS as a shared neoantigen, we are currently evaluating the potential utility of SLATE-001 in patients with advanced colorectal (microsatellite stable) cancer, lung adenocarcinoma and pancreatic ductal adenocarcinoma. Our preliminary estimates of the addressable patient population in these diseases range from 10 to 15%.

The driver of appropriate utilization of the off-shelf-product candidate is the ability to accurately identify patients whose tumors contain one of the TSNA represented within the off-the-shelf product. The widespread use of tumor mutation panel sequencing in advanced cancer has enabled the identification of such patients, and complementary assessment of a patient's HLA type is a standard clinical test, performed off a routine blood draw, and completed within 7-10 days by a clinical immunology laboratory.

We expect that the manufacturing of the SLATE product candidate series will be carried out using our current supply chain. The off-the-shelf nature of the product candidates allows us to leverage our processes developed for personalized products.

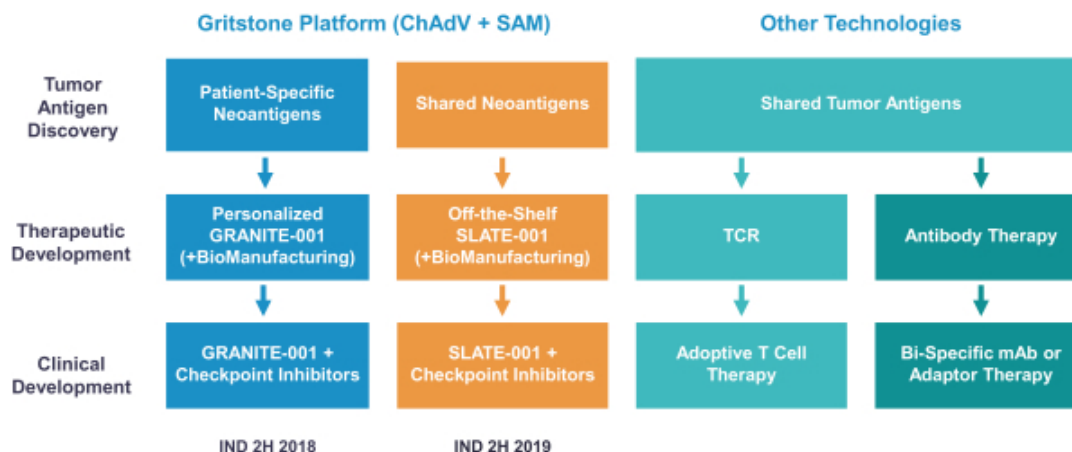
Our EDGE Antigen Identification Engine—Beyond Tumor-Specific Neoantigens

Our EDGE antigen discovery platform has also identified novel, functionally tumor-specific antigens which, as opposed to most TSNA, are commonly shared between patients. A leading set of shared tumor antigens derives from cancer testis antigens, or CTA, genes that are non-mutated and normally only expressed in the testis, but which can also be expressed by some tumor tissue. The testis is an immune privileged site such that it is able to express antigens without eliciting an immune response. CTA are well established in the literature and our approach has identified many genes, and antigens from within those genes, that may represent novel shared-tumor antigens. Currently, tumor-specific CTA targets are limited; known HLA/peptide CTA are present in only a fraction of patients within any given tumor type, with some tumor types exhibiting essentially no HLA/peptide targets

available in the public domain. We believe our EDGE platform has the potential to unlock these tumor types for therapeutic development by providing novel cancer immunotherapy targets that may be exploited via several therapeutic modalities.

We are developing TCRs and antibodies that specifically recognize these novel shared tumor-specific antigens and their corresponding HLA surface proteins. These targets can be addressed therapeutically using several different formats, such as adoptive T cell therapy, bispecific antibody approaches and vaccination. These programs are in early development. Our TSNA and shared tumor antigen discovery programs are shown in Figure 17 below.

Figure 17. Our TSNA and Shared Tumor Antigen Discovery Programs



TCR-Mimetic Antibodies

While TCRs are the natural biological recognition elements on T cells for a particular HLA/peptide complex, it is possible to identify antibodies that bind with high affinity and high selectivity to a particular HLA/peptide complex. These have been termed TCR-mimetic antibodies. We have commenced working with a third-party contract research organization, or CRO, to identify TCR-mimetic antibodies against several of our novel CTA HLA/peptide complexes. These antibodies have two potential applications:

- *Bispecific T cell engaging antibodies.* A class of antibody therapeutics has been developed which modifies the typical two-armed antibody structure wherein both arms recognize the same target antigen. The modification employs different antigen specificities within the two arms—one arm recognizes a tumor antigen and the other recognizes and activates immune-effector cells such as T cells. The product concept we are developing is to use an anti-CTA TCR-mimetic single chain antibody fragment, or scFv, as the tumor-binding domain of a bispecific T cell engaging antibody, thus generating a suite of bispecific antibodies capable of engaging novel targets. We may partner with a company that has developed a bispecific antibody framework to develop a therapeutic for clinical trial testing.
- *Surface receptors for CAR-T cells.* Chimeric antigen receptor T cells, or CAR-T cells, have demonstrated clinical benefit when targeting the highly expressed B cell surface markers such

as CD19. The chimeric antigen receptor in these approaches comprises an scFv which recognizes the target antigen (such as CD19). Replacing the anti-B cell scFv with an anti-CTA TCR-mimetic scFv can, in principle, create a CAR-T cell which recognizes tumor cells expressing the relevant CTA-derived HLA/peptide complex. We currently plan to partner such products with established cell therapy companies.

T Cell Receptors

TCRs recognize HLA/peptides, and once we have identified CTA-derived peptides plus their HLA binding partner as tumor-specific antigens, we can proceed to the identification of matched TCRs. This is performed using healthy HLA-matched donors as a source of diverse T cells and screening these T cells against the target HLA/peptides. T cells that activate and expand in response to a target HLA/peptide will express relevant TCRs, and these can be characterized by isolation of the relevant T cells and sequencing of their TCR genes. These natural TCRs may offer advantages over alternative TCR identification approaches. We possess the internal expertise to identify HLA/peptide specific TCRs from HLA-matched donor blood, and we may partner those TCRs with established adoptive T cell therapy companies.

Manufacturing and Process Development

Manufacturing is a vital component of our personalized immunotherapy, and we are devoting significant resources to manufacturing and process development in order to optimize the safety and efficacy of our product candidates, as well as to reduce our per-unit manufacturing costs and time to market. The production of our personalized immunotherapy requires two distinct elements for each patient: tumor biopsy analysis to determine candidate neoantigens, followed by manufacture of vectors containing a personalized cassette encoding the selected neoantigens. The manufacture of these vectors involves complex processes, including per-patient plasmid production, mammalian cell production of virus and RNA synthesis and lipid encapsulation.

Our near-term goal is to carefully manage our fixed-cost structure, maximize optionality, and drive long-term cost of goods as low as possible. We currently use a hybrid approach to manufacturing our personalized immunotherapy whereby certain elements of our product candidates are manufactured on an out-sourced basis at CMOs, and other elements of our product candidates are manufactured internally at the 42,600 square foot manufacturing facility we established in 2017 in Pleasanton, California, all designed in compliance with cGMP. Our manufacturing strategy is designed to meet the demand needs of clinical supply and commercial launch, and we believe this hybrid approach will position us to support multi-center clinical trials and commercialization in the most time-efficient manner. In addition, the initial strategy of use of both CMOs and our own facility will provide capacity flexibility to meet potential changes in demand.

To date, we have leveraged our relationships with CMOs for preclinical studies and Phase 1/2 clinical trial supply. Doing so has significantly accelerated our ability to advance clinical trials, gain insights into the multiple manufacturing processes and establish an infrastructure for future trials. We believe our use of CMOs will also increase the speed with which capacity can be brought online, as well as enable technology transfer of processes from the CMOs into our in-house facility.

Our manufacturing process begins with receipt of a patient's routine biopsy and blood sample at our Cambridge, Massachusetts facility, where TSNA identification is performed using the EDGE platform. The TSNA sequences generated by our platform are sent electronically to a synthetic biology CMO to generate the patient-specific TSNA cassette, which is then cloned into each of the ChAdV and SAM vectors, and amplified. Following amplification, the ChAdV vector containing the cassette is sent to our Pleasanton, California facility for ChAdV manufacture and production into vials. In parallel, the

SAM vector is sent to another CMO for RNA manufacture and then to a final CMO for formulation into LNP and production into vials. Currently, the entire manufacturing process, from biopsy receipt at Gritstone to the release and shipment of the personalized immunotherapy candidate to the clinical site for patient administration, takes approximately 16-20 weeks. This is consistent with the stated production and release times for other personalized immunotherapy approaches (mRNA or peptide) described in the literature. We expect this production and release timeline (and associated cost) will diminish over time due to process scaling, potential improvements in production and testing technologies and internal process expertise as well as potential reductions in regulatory testing requirements based on clinical experience.

To achieve this, our process development group is focused on several key initiatives. The first is investigating novel approaches to manufacturing our products, including process optimization and quality by design of each intermediate, drug substance and drug product. Additionally, we are systematically characterizing our manufacturing processes, including product intermediates and manufacturing unit operations. This characterization effort will allow us to implement process changes over the entire product lifecycle and to quickly react to evolving process technologies that can lead to reductions in per-unit manufacturing costs and shorter process cycle times. In addition, we plan to establish automated, closed-platform manufacturing processes. Such processes should give us the ability to conduct manufacturing in a non-classified, lower cost manufacturing environment for multiple steps of our drug product manufacturing.

Our longer-term goal is to internalize the majority of the manufacturing steps to drive down both cost and production time, as well as establish full control over intellectual property and product quality. We believe that operating our own manufacturing facility will provide us with enhanced control of material supply for both clinical trials and the commercial market, will enable the more rapid implementation of process changes, and will allow for better long-term margins. We continue efforts toward the phased integration of all manufacturing into our Pleasanton, California biomanufacturing facility. The ChAdV prime production is already fully integrated into the Pleasanton facility and we have initiated efforts toward integrating the SAM boost production in-house.

Our manufacturing strategy is currently structured to support our U.S., E.U. and Australian development plans. We believe this manufacturing strategy developed for global distribution will enable use in other geographies. Specific supply strategies for other geographies will be developed as part of our clinical and commercial plans for such other geographies.

License Agreement with Arbutus Biopharma Corporation

On October 16, 2017, we executed a license agreement with Arbutus Biopharma Corporation, or Arbutus. Arbutus is a leader in LNP technology with a broad intellectual property estate and a large library of LNPs, including multiple LNPs being used in clinical development by its partners, as well as the chemistry expertise to synthesize novel LNPs with properties optimal for SAM.

Under the agreement, Arbutus grants us a worldwide, exclusive (even as to Arbutus, subject to certain limited exceptions), sublicensable, transferable license, to research, develop, manufacture, and commercialize our novel RNA-based platform for intracellular delivery of SAM encoding TSNA in combination with one or more of Arbutus' proprietary LNPs. The licensed technology includes Arbutus' portfolio of proprietary and clinically validated LNP products and associated intellectual property, and includes technology transfer of Arbutus' manufacturing know-how.

As part of our collaboration, we have identified an LNP formulation that we believe will be optimal for use in our Phase 1/2 clinical trial of GRANITE-001. This LNP formulation is currently being used by third parties in human clinical trials in the United States. We have also initiated an effort to screen

Arbutus' library of LNPs and evaluate novel LNPs to potentially identify an LNP that increases the potency of our SAM platform further. Our goal is to deliver a second generation SAM immunotherapy that has the potential to serve as a homologous prime-boost immunotherapy.

Under the license agreement, we paid Arbutus an upfront payment of \$5.0 million. We have also agreed to make aggregate payments of up to \$73.5 million upon the achievement of specified development milestones for up to three products, and an aggregate \$50.0 million in commercial milestone payments, as well as royalty payments in the low single-digits on net sales of licensed products for a royalty term lasting until the expiration of the last patent covered under the license. The last-to-expire patent is currently scheduled to expire on November 10, 2030. Pending applications will nominally expire 20 years after the filing date of the first utility application to which they claim priority. In the near term, upon acceptance of our first IND, we will be obligated to pay the first milestone payment of \$2.5 million to Arbutus, with further milestone payments not expected to occur before 2021. In addition, we will reimburse Arbutus for conducting technology development and providing manufacturing and regulatory support for our product candidates.

The Arbutus license continues in effect until the last to expire royalty payment or early termination. The license is terminable by us for convenience with 60 days prior written notice, upon payment of a no-cause termination sum. We may also terminate in the event of material adverse safety data for a product, failure to achieve a primary or secondary efficacy endpoint, or if a regulatory authority takes action that prevents us from commercializing any product. Either party may terminate the agreement for material breach, and Arbutus may terminate the agreement for abandonment or if we challenge Arbutus patents.

Competition

The biotechnology and pharmaceutical industries put significant emphasis and resources into the development of novel and proprietary therapies for cancer treatment. We face substantial competition from many different sources, including large and specialty pharmaceutical and biotechnology companies, academic research institutions and governmental agencies and public and private research institutions. We anticipate that we will continue to face increasing competition in the field of cancer therapy as new therapies, technologies, and data emerge from the field.

In addition to the current standard of care for patients, commercial and academic clinical trials are being pursued by a number of parties in the field of immunotherapy. Results from these trials have fueled continued interest in immunotherapy and our competitors include:

- In the neoantigen space, Agenus Inc., Neon Therapeutics Inc., or Neon, BioNTech AG in collaboration with Genentech Inc., Moderna Therapeutics, Inc. in collaboration with Merck & Co. Inc., Aduro Biotech, Inc., Advaxis Immunotherapies, Achilles Therapeutics, NousCom AG, ISA Pharmaceuticals BV, CureVac AG in collaboration with Eli Lilly and Company, Genocea Biosciences Inc., Vaccibody AS and PACT Pharma, Inc., or PACT.
- In the bispecific antibody space, Roche, MacroGenics, Inc., Xencor Inc., Adimab LLC, Zymeworks Inc., F-Star Biotechnology Ltd., Novimmune SA, Genmab A/S, Five Prime Therapeutics, Inc., Merus N.V. and Immatics Biotechnologies GmbH.
- In the engineered cell therapy and TCR space, Novartis, Juno Therapeutics (acquired by Celgene Corporation), Kite Pharma (acquired by Gilead Sciences, Inc.), bluebird bio, Inc., Medigene AG, Adaptimmune Therapeutics plc, Amgen Inc., Atara Biotherapeutics, Inc., Autolus Limited, Collectis S.A., PACT, Neon, Mustang Bio, Inc., Iovance Biotherapeutics, Inc., TCR2 Therapeutics Inc., Editas Medicine, Inc., Unum Therapeutics Inc., Intrexon Corporation, CRISPR Therapeutics AG and Bellicum Pharmaceuticals, Inc.

Many of our competitors, either alone or with their strategic partners, have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology and gene therapy industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. The key competitive factors affecting the success of all of our programs are likely to be their efficacy, safety, cost and convenience.

Intellectual Property

Our commercial success depends in part on our ability to obtain and maintain proprietary protection for our products and services, to operate without infringing the proprietary rights of others, and to prevent others from infringing our proprietary rights. We rely on a combination of patents and trade secrets, as well as contractual protections, to establish and protect our intellectual property rights. We seek to protect our proprietary position by, among other things, filing patent applications in the United States and internationally. Our patent estate includes patent applications with claims relating to our products, methods, and manufacturing processes, and broader claims for potential future products and developments. As of July 31, 2018, our solely-owned patent portfolio includes, on a worldwide basis, 46 pending patent applications relating to our products, methods, and manufacturing processes, including approximately 21 pending patent applications in the United States and approximately 25 pending patent applications filed internationally, and we have received a notice of issuance for a U.S. patent application relating to the use of a predictive model to identify neoantigens, particularly where the predictive model was trained using mass spectrometry data.

Our solely-owned patent estate includes a portfolio of pending patent applications related to our neoantigen-based platform; and a portfolio of pending patent applications related to our shared antigen-based platform. Details regarding these portfolios are provided below.

As of July 31, 2018, our solely-owned patent portfolio related to our neoantigen-based platform includes greater than 11 pending U.S. patent applications and greater than 21 ex-U.S. patent applications pending in countries including Taiwan, Australia, Brazil, Canada, Israel, Japan, Mexico, Malaysia, New Zealand, Peru, Philippines, Singapore, China, Colombia, the European Patent Office, South Korea, India, Indonesia, Russia and South Africa with claims related to neoantigen identification and related uses and manufacture. Any patents that may issue from these pending patent applications are expected to expire between 2036 and 2039, absent any patent term adjustments or extensions. These patent applications are all composition of matter, use, or process patent applications related to GRANITE-001.

As of June 30, 2018, our solely-owned patent portfolio related to our shared antigen-based platform includes greater than four pending U.S. provisional patent applications with claims related to shared antigens, shared antigen-binding proteins, and their related uses and manufacture. Any patents

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that may issue from these pending patent applications are expected to expire between 2038 and 2039, absent any patent term adjustments or extensions.

In addition to patents, we have filed for trademark registration with the United States Patent and Trademark Office, or the USPTO, for "Gritstone," "Granite", "Slate" and our logo. Furthermore, we rely upon trade secrets, know-how and continuing technological innovation to develop and maintain our competitive position.

In some instances, we submit patent applications directly with the USPTO as provisional patent applications. Provisional applications for patents were designed to provide a lower-cost first patent filing in the United States. Corresponding non-provisional patent applications must be filed not later than 12 months after the provisional application filing date. The corresponding non-provisional application benefits in that the priority date(s) of the patent application is/are the earlier provisional application filing date(s), and the patent term of the finally issued patent is calculated from the later non-provisional application filing date. This system allows us to obtain an early priority date, add material to the patent application(s) during the priority year, obtain a later start to the patent term and to delay prosecution costs, which may be useful in the event that we decide not to pursue examination in an application. We file U.S. non-provisional applications and Patent Cooperation Treaty, or PCT, applications that claim the benefit of the priority date of earlier filed provisional applications, when applicable. The PCT system allows a single application to be filed within 12 months of the original priority date of the patent application, and to designate all of the 152 PCT member states in which national patent applications can later be pursued based on the international patent application filed under the PCT. The PCT searching authority performs a patentability search and issues a non-binding patentability opinion which can be used to evaluate the chances of success for the national applications in foreign countries prior to having to incur the filing fees. Although a PCT application does not issue as a patent, it allows the applicant to seek protection in any of the member states through national-phase applications.

At the end of the period of two and a half years from the first priority date of the patent application, separate patent applications can be pursued in any of the PCT member states either by direct national filing or, in some cases by filing through a regional patent organization, such as the European Patent Organization. The PCT system delays expenses, allows a limited evaluation of the chances of success for national/regional patent applications and enables substantial savings where applications are abandoned within the first two and a half years of filing.

For all patent applications, we determine claiming strategy on a case-by-case basis. Advice of counsel and our business model and needs are always considered. We file patents containing claims for protection of all useful applications of our proprietary technologies and any products, as well as all new applications and/or uses we discover for existing technologies and products, assuming these are strategically valuable. We continuously reassess the number and type of patent applications, as well as the pending and issued patent claims to ensure that maximum coverage and value are obtained for our processes, and compositions, given existing patent office rules and regulations. Further, claims may be modified during patent prosecution to meet our intellectual property and business needs.

We recognize that the ability to obtain patent protection and the degree of such protection depends on a number of factors, including the extent of the prior art, the novelty and non-obviousness of the invention, and the ability to satisfy the enablement requirement of the patent laws. The patent positions of biotechnology companies like ours are generally uncertain and involve complex legal, scientific and factual questions. In addition, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted or further altered even after patent issuance. Consequently, we may not obtain or maintain adequate patent protection for any of our product candidates or for our technology platform. We cannot predict whether the patent

applications we are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient proprietary protection from competitors. Any patents that we hold may be challenged, circumvented or invalidated by third parties.

Our commercial success will also depend in part on not infringing the proprietary rights of third parties. In addition, we have licensed rights under proprietary technologies of third parties to develop, manufacture and commercialize specific aspects of our products. It is uncertain whether the issuance of any third party patent would require us to alter our development or commercial strategies, alter our processes, obtain licenses or cease certain activities. The expiration of patents or patent applications licensed from third parties or our breach of any license agreements or failure to obtain a license to proprietary rights that we may require to develop or commercialize our future technology may have a material adverse impact on us. If third parties prepare and file patent applications in the United States that also claim technology to which we have rights, we may have to participate in interference proceedings in the USPTO to determine priority of invention.

We further own trade secrets relating to our technology, and we maintain the confidentiality of proprietary information to 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 trade secrets and know-how by entering into confidentiality agreements with third parties, consultants and employees who have access to such trade secrets and know-how. These agreements provide that all confidential information concerning our business or financial affairs developed or made known to the individual during the course of the individual's relationship with us are to be kept confidential and not disclosed to third parties except in specific circumstances. In addition, we enter into employment agreements that require employees to assign to us any inventions, trade secrets or know-how that they develop while employed by us. Although we take steps to protect our proprietary information and trade secrets, including through agreements with our employees and consultants, these agreements may be breached, or third parties may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets or disclose our technology. Thus, we may not be able to meaningfully protect our trade secrets. To the extent that our employees, consultants, scientific advisors or other contractors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know how and inventions.

For a more comprehensive discussion of the risks related to our intellectual property, please see "Risk Factors—Risks Related to Intellectual Property."

Government Regulation

The FDA and other regulatory authorities at federal, state, and local levels, as well as in foreign countries, extensively regulate, among other things, the research, development, testing, manufacture, quality control, import, export, safety, effectiveness, labeling, packaging, storage, distribution, record keeping, approval, advertising, promotion, marketing, post-approval monitoring, and post-approval reporting of biologics such as those we are developing. We, along with third-party contractors, will be required to navigate the various preclinical, clinical and commercial approval requirements of the governing regulatory agencies of the countries in which we wish to conduct studies or seek approval or licensure of our product candidates.

The process required by the FDA before biologic product candidates may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests and animal studies performed in accordance with the FDA's current Good Laboratory Practices, or GLP, regulation;

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- submission to the FDA of an IND, which must become effective before clinical trials may begin and must be updated annually or when significant changes are made;
- approval by an independent Institutional Review Board, or IRB, or ethics committee at each clinical site before the trial is commenced;
- performance of adequate and well-controlled human clinical trials to establish the safety, purity and potency of the proposed biologic product candidate for its intended purpose;
- preparation of and submission to the FDA of a BLA after completion of all pivotal clinical trials;
- satisfactory completion of an FDA Advisory Committee review, if applicable;
- a determination by the FDA within 60 days of its receipt of a BLA to file the application for review;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities at which the proposed product is produced to assess compliance with cGMP and to assure that the facilities, methods and controls are adequate to preserve the biological product's continued safety, purity and potency, and of selected clinical investigation sites to assess compliance with Good Clinical Practices, or GCP; and
- FDA review and approval of the BLA to permit commercial marketing of the product for particular indications for use in the United States.

Preclinical and Clinical Development

Prior to beginning the first clinical trial with a product candidate, we must submit an IND to the FDA. An IND is a request for authorization from the FDA to administer an investigational new drug product to humans. The central focus of an IND submission is on the general investigational plan and the protocol(s) for clinical studies. The IND also includes results of animal and in vitro studies assessing the toxicology, pharmacokinetics, pharmacology, and pharmacodynamic characteristics of the product; chemistry, manufacturing, and controls information; and any available human data or literature to support the use of the investigational product. An IND must become effective before human clinical trials may begin. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, raises safety concerns or questions about the proposed clinical trial. In such a case, the IND may be placed on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns or questions before the clinical trial can begin. Submission of an IND therefore may or may not result in FDA authorization to begin a clinical trial.

In addition to the IND submission process, sponsors of certain clinical studies of cells containing recombinant or synthetic nucleic acid molecules, including human gene transfer studies, must comply with the National Institutes of Health, or NIH, Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules, or NIH Guidelines. Although compliance with the NIH Guidelines is mandatory for research conducted at or sponsored by institutions receiving NIH funding of recombinant or synthetic nucleic acid molecule research, many companies and other institutions not otherwise subject to the NIH Guidelines voluntarily follow them. The NIH Guidelines set forth the principles and requirements for NIH and institutional oversight of research with recombinant or synthetic nucleic acid molecules, including the standards for investigators and institutions to follow to ensure the safe handling and containment of such molecules. A subset of human gene transfer protocols are subject to review by the NIH Recombinant DNA Advisory Committee, or RAC, a federal advisory committee that provides recommendations regarding research involving recombinant or synthetic nucleic acid molecules. Specifically, RAC review of a protocol is required in exceptional cases where (1) an oversight body such as an Institutional Biosafety Committee, or IBC, which provides local review and oversight of research utilizing recombinant or synthetic nucleic acid molecules, or an IRB determines

that the protocol would significantly benefit from RAC review, and (2) the protocol (a) uses a new vector, genetic material, or delivery methodology that represents a first-in-human experience and thus presents an unknown risk, and/or (b) relies on preclinical safety data that were obtained using a new preclinical model system of unknown and unconfirmed value, and/or (c) involves a proposed vector, gene construct, or method of delivery associated with possible toxicities that are not widely known and that may render it difficult for oversight bodies to evaluate the protocol rigorously. The RAC review proceedings are public, and reports are posted publicly to the website for the NIH's Office of Biotechnology Activities. Independent of RAC review, the NIH Guidelines also require all human gene transfer protocols subject to the NIH Guidelines to be registered with NIH, with limited exemptions. A study subject to the NIH Guidelines may not begin until the IBC approves the protocol, and the IBC cannot approve the protocol until confirmation from the NIH that such registration is complete. In the event that RAC review is warranted, the protocol registration process cannot be completed until RAC review has taken place.

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical study. Clinical trials are conducted under protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A separate submission to the existing IND must be made for each successive clinical trial conducted during product development and for any subsequent protocol amendments. Furthermore, an independent IRB for each site proposing to conduct the clinical trial must review and approve the plan for any clinical trial and its informed consent form before the clinical trial begins at that site, and must monitor the study until completed. Regulatory authorities, the IRB or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable health risk or that the trial is unlikely to meet its stated objectives. Some studies also include oversight by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board, which provides authorization for whether or not a study may move forward at designated check points based on access to certain data from the study and may halt the clinical trial if it determines that there is an unacceptable safety risk for subjects or other grounds, such as no demonstration of efficacy. There are also requirements governing the reporting of ongoing clinical studies and clinical study results to public registries.

For purposes of BLA approval, human clinical trials are typically conducted in three sequential phases that may overlap.

- Phase 1—The investigational product is initially introduced into healthy human subjects or patients with the target disease or condition. These studies are designed to test the safety, dosage tolerance, absorption, metabolism and distribution of the investigational product in humans, the side effects associated with increasing doses, and, if possible, to gain early evidence on effectiveness.
- Phase 2—The investigational product is administered to a limited patient population with a specified disease or condition to evaluate the preliminary efficacy, optimal dosages and dosing schedule and to identify possible adverse side effects and safety risks. Multiple Phase 2 clinical trials may be conducted to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- Phase 3—The investigational product is administered to an expanded patient population to further evaluate dosage, to provide statistically significant evidence of clinical efficacy and to further test for safety, generally at multiple geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk/benefit ratio of the investigational product and to provide an adequate basis for product approval.

In some cases, the FDA may require, or companies may voluntarily pursue, additional clinical trials after a product is approved to gain more information about the product. These so-called Phase 4 studies may be made a condition to approval of the BLA. Concurrent with clinical trials, companies may complete additional animal studies and develop additional information about the biological characteristics of the product candidate, and 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 candidate and, among other things, must develop methods for testing the identity, strength, quality and purity of the final product, or for biologics, the safety, purity and potency. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

BLA Submission and Review

Assuming successful completion of all required testing in accordance with all applicable regulatory requirements, the results of product development, nonclinical studies and clinical trials are submitted to the FDA as part of a BLA requesting approval to market the product for one or more indications. The BLA must include all relevant data available from pertinent preclinical and clinical studies, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's chemistry, manufacturing, controls, and proposed labeling, among other things. The submission of a BLA requires payment of a substantial application user fee to FDA, unless a waiver or exemption applies.

Once a BLA has been submitted, the FDA's goal is to review standard applications within ten months after it accepts the application for filing, or, if the application qualifies for priority review, six months after the FDA accepts the application for filing. In both standard and priority reviews, the review process is often significantly extended by FDA requests for additional information or clarification. The FDA reviews a BLA to determine, among other things, whether a product is safe, pure and potent and the facility in which it is manufactured, processed, packed, or held meets standards designed to assure the product's continued safety, purity and potency. The FDA may convene an advisory committee to provide clinical insight on application review questions. Before approving a 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. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP. If the FDA determines that the application, manufacturing process or manufacturing facilities are not acceptable, it will outline the deficiencies in the submission and often will request additional testing or information. Notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

After the FDA evaluates a BLA and conducts inspections of manufacturing facilities where the investigational product and/or its drug substance will be produced, 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. A Complete Response letter will describe all of the deficiencies that the FDA has identified in the BLA, except that where the FDA determines that the data supporting the application are inadequate to support approval, the FDA may issue the Complete Response letter without first conducting required inspections, testing submitted product lots, and/or reviewing proposed labeling. In issuing the Complete Response letter, the FDA may recommend actions that the applicant might take to place the BLA in condition for approval, including requests for additional information or clarification. The FDA may delay or refuse approval of a BLA if applicable regulatory criteria are not satisfied, require additional testing or information and/or require post-marketing testing and surveillance to monitor safety or efficacy of a product.

If regulatory approval of a product is granted, such approval will be granted for particular indications and may entail limitations on the indicated uses for which such product may be marketed. For example, the FDA may approve the BLA with a Risk Evaluation and Mitigation Strategy, or REMS, to ensure the benefits of the product outweigh its risks. A REMS is a safety strategy to manage a known or potential serious risk associated with a product and to enable patients to have continued access to such medicines by managing their safe use, and could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. The FDA also may condition approval on, among other things, changes to proposed labeling or the development of adequate controls and specifications. Once approved, the FDA may withdraw the product approval if compliance with pre- and post-marketing requirements is not maintained or if problems occur after the product reaches the marketplace. The FDA may require one or more Phase 4 postmarket studies and surveillance to further assess and monitor the product's safety and effectiveness after commercialization, and may limit further marketing of the product based on the results of these post-marketing studies.

Expedited Development and Review Programs

The FDA offers a number of expedited development and review programs for qualifying product candidates. The fast track program is intended to expedite or facilitate the process for reviewing new products that meet certain criteria. Specifically, new products are eligible for fast track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Fast track designation applies to the combination of the product and the specific indication for which it is being studied. The sponsor of a fast track product has opportunities for frequent interactions with the review team during product development and, once a BLA is submitted, the product may be eligible for priority review. A fast track product may also be eligible for rolling review, where the FDA may consider for review sections of the BLA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the BLA, the FDA agrees to accept sections of the BLA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the BLA.

A product intended to treat a serious or life-threatening disease or condition may also be eligible for breakthrough therapy designation to expedite its development and review. A product can receive breakthrough therapy designation if 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 designation includes all of the fast track program features, as well as more intensive FDA interaction and guidance beginning as early as Phase 1 and an organizational commitment to expedite the development and review of the product, including involvement of senior managers.

Any marketing application for a biologic submitted to the FDA for approval, including a product with a fast track designation and/or breakthrough therapy designation, may be eligible for other types of FDA programs intended to expedite the FDA review and approval process, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide a significant improvement in the treatment, diagnosis or prevention of a serious disease or condition compared to marketed products. For products containing new molecular entities, priority review designation means the FDA's goal is to take action on the marketing application within six months of the 60-day filing date (compared with ten months under standard review).

Additionally, products studied for their safety and effectiveness in treating serious or life-threatening diseases or conditions may receive accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a

clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of accelerated approval, the FDA will generally require the sponsor to perform adequate and well-controlled post-marketing clinical studies to verify and describe the anticipated effect on irreversible morbidity or mortality or other clinical benefit. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product.

In 2017, FDA established a new regenerative medicine advanced therapy, or RMAT, designation as part of its implementation of the 21st Century Cures Act. The RMAT designation program is intended to fulfill the 21st Century Cures Act requirement that FDA facilitate an efficient development program for, and expedite review of, any drug that meets the following criteria: (1) it qualifies as a RMAT, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, with limited exceptions; (2) it is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and (3) preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such a disease or condition. Like breakthrough therapy designation, RMAT designation provides potential benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate and eligibility for rolling review and priority review. Products granted RMAT designation may also be eligible for accelerated approval on the basis of a surrogate or intermediate endpoint reasonably likely to predict long-term clinical benefit, or reliance upon data obtained from a meaningful number of sites, including through expansion to additional sites. Once approved, when appropriate, the FDA can permit fulfillment of post-approval requirements under accelerated approval through the submission of clinical evidence, clinical studies, patient registries, or other sources of real world evidence such as electronic health records; through the collection of larger confirmatory datasets; or through post-approval monitoring of all patients treated with the therapy prior to approval.

Fast track designation, breakthrough therapy designation, priority review, accelerated approval, and RMAT designation do not change the standards for approval but may expedite the development or approval process.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States, or more than 200,000 individuals in the United States for which there is no reasonable expectation that the cost of developing and making available in the United States a drug or biologic for this type of disease or condition will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. The orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review or approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan drug exclusive approval (or exclusivity), which means that the FDA may not approve any other applications, including a full BLA, to market the same biologic for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity. Orphan drug exclusivity does not prevent FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA application fee.

A designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan designation. In addition, exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

Post-Approval Requirements

Any products manufactured or distributed by us pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to record-keeping, reporting of adverse experiences, periodic reporting, product sampling and distribution, and advertising and promotion of the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims, are subject to prior FDA review and approval. There also are continuing user fee requirements, under which FDA assesses an annual program fee for each product identified in an approved BLA. Biologic manufacturers and 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 cGMP, which impose certain procedural and documentation requirements upon us and our third-party manufacturers. Changes to the manufacturing process are strictly regulated, and, depending on the significance of the change, may require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting requirements upon us and any third-party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the area of production and quality control to maintain compliance with cGMP and other aspects of regulatory compliance.

The FDA may withdraw approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later 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 studies to assess new safety risks; or imposition of distribution restrictions or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of a product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical studies;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of existing product approvals;
- product seizure or detention, or refusal of the FDA to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

The FDA closely regulates the marketing, labeling, advertising and promotion of biologics. A company can make only those claims relating to safety and efficacy, purity and potency that are approved by the FDA and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. Failure to comply with these requirements can result in, among other things, adverse publicity, warning letters, corrective advertising and potential civil and criminal penalties. Physicians may prescribe legally available products for uses that are not described in the product's labeling and that differ from those tested by us and approved by the FDA. Such off-label uses are common across medical specialties.

Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, restrict manufacturer's communications on the subject of off-label use of their products.

Biosimilars and Reference Product Exclusivity

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively, the ACA, signed into law in 2010, includes a subtitle called the Biologics Price Competition and Innovation Act of 2009, or BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-approved reference biological product. To date, a number of biosimilars have been licensed under the BPCIA, and numerous biosimilars have been approved in Europe. The FDA has issued several guidance documents outlining an approach to review and approval of biosimilars.

Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency, can be shown through analytical studies, animal studies, and a clinical study or studies. Interchangeability requires that a product is biosimilar to the reference product and the product must demonstrate that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the biologic and the reference biologic may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic. Complexities associated with the larger, and often more complex, structures of biological products, as well as the processes by which such products are manufactured, pose significant hurdles to implementation of the abbreviated approval pathway that are still being worked out by the FDA.

Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing that applicant's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of its 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.

The BPCIA is complex and continues to be interpreted and implemented by the FDA. In addition, recent government proposals have sought to reduce the 12-year reference product exclusivity period. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. As a result, the ultimate impact, implementation, and impact of the BPCIA is subject to significant uncertainty.

Other Healthcare Laws and Compliance Requirements

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. Such laws include, without limitation: the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, receiving, offering or paying remuneration, to induce, or in return for, either the referral of an individual, or the purchase or recommendation of an item or service for which payment may be made under any federal

healthcare program; federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment to the federal government, including federal healthcare programs, that are false or fraudulent; HIPAA, which created additional federal criminal statutes which prohibit, among other things, executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters, and which, as amended by HITECH, also imposes certain requirements on HIPAA covered entities and their business associates relating to the privacy, security and transmission of individually identifiable health information; the U.S. federal Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to annually report to the federal government, information related to payments or other transfers of value made to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and U.S. state and foreign law equivalents of each of the above federal laws, which, in some cases, differ from each other in significant ways, and may not have the same effect, thus complicating compliance efforts. If their operations are found to be in violation of any of such laws or any other governmental regulations that apply, they may be subject to penalties, including, without limitation, civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations.

Coverage and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any pharmaceutical or biological product for which we obtain regulatory approval. Sales of any product depend, in part, on the extent to which such product will be covered by third-party payors, such as federal, state, and foreign government healthcare programs, commercial insurance and managed healthcare organizations, and the level of reimbursement for such product by third-party payors. Decisions regarding the extent of coverage and amount of reimbursement to be provided are made on a plan-by-plan basis. For products administered under the supervision of a physician, obtaining coverage and adequate reimbursement may be particularly difficult because of the higher prices often associated with such drugs. Additionally, separate reimbursement for the product itself or the treatment or procedure in which the product is used may not be available, which may impact physician utilization.

In addition, the U.S. government, state legislatures and foreign governments have continued implementing cost-containment programs, including price controls, restrictions on coverage and reimbursement and requirements for substitution of generic products. Third-party payors are increasingly challenging the prices charged for medical products and services, examining the medical necessity and reviewing the cost effectiveness of pharmaceutical or biological products, medical devices and medical services, in addition to questioning safety and efficacy. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit sales of any product. Decreases in third-party reimbursement for any product or a decision by a third-party payor not to cover a product could reduce physician usage and patient demand for the product. No regulatory authority has granted approval for a personalized cancer immunotherapy based on a vaccine approach, and there is no model for reimbursement of this type of product.

Healthcare Reform

The United States and some foreign jurisdictions are considering or have enacted a number of reform proposals to change the healthcare system. There is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by federal and state legislative initiatives, including those designed to limit the pricing, coverage, and reimbursement of pharmaceutical and biopharmaceutical products, especially under government-funded health care programs, and increased governmental control of drug pricing.

In March 2010, the ACA was signed into law, which substantially changed the way healthcare is financed by both governmental and private insurers in the United States, and significantly affected the pharmaceutical industry. The ACA contains a number of provisions of particular import to the pharmaceutical and biotechnology industries, including, but not limited to, those governing enrollment in federal healthcare programs, 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, and annual fees based on pharmaceutical companies' share of sales to federal health care programs. Since its enactment, there have been judicial and Congressional challenges to certain aspects of the ACA, and we expect there will be additional challenges and amendments to the ACA in the future. For example, the Tax Cuts and Jobs Act was enacted, which, among other things, removes penalties for not complying with ACA's individual mandate to carry health insurance. Since the enactment of the Tax Cuts and Jobs Act of 2017, there have been additional amendments to certain provisions of the ACA, and the current Trump administration and Congress may continue to seek to modify, repeal, or otherwise invalidate all, or certain provisions of, the ACA. It is still uncertain whether any changes will take time to unfold, and their potential impact on coverage and reimbursement for healthcare items and services, among other things.

Other legislative changes have been proposed and adopted since the ACA was enacted, including aggregate reductions of Medicare payments to providers of 2% per fiscal year and reduced payments to several types of Medicare providers. Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. At the federal level, the Trump administration's budget proposal for fiscal year 2019 contains further drug price control measures that could be enacted during the 2019 budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. Further, the Trump administration released a "Blueprint", or plan, to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase drug manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products, and reduce the out of pocket costs of drug products paid by consumers. The Department of Health and Human Services, or HHS, has already started the process of soliciting feedback on some of these measures and, at the same time, is immediately implementing others under its existing authority. While some proposed measures will require authorization through additional legislation to become effective, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. 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.

Our Interactions with the FDA

Medical Device

In two separate FDA interactions, the FDA advised us that our machine learning software will not be developed under medical device diagnostic regulations. In August 2016, the FDA's Center for Devices and Radiological Health, or CDRH, determined that the TSNA prediction software is a Non-Significant Risk, or NSR, device, and an investigational device exemption, or IDE, submission is not required to conduct clinical studies with our product candidate. In April 2017, the FDA's Center for Biologics Evaluation and Research, or CBER, confirmed that medical device diagnostic regulations do not apply to our testing and processing of the patient-specific TSNA, and that quality requirements could be met through compliance with biologic cGMPs. Based on these interactions, we believe no additional device-related regulatory submissions (such as an IDE or pre-market approval application (PMA)) or device development activities are required and our TSNA prediction software procedure will be regulated as part of our cGMP manufacturing process.

Preclinical Safety

To address the personalized nature of our therapy in a Pre-Pre-IND interaction with the FDA's CBER Office of Tissues and Advanced Therapies, or OTAT, the FDA advised us that a single toxicological animal study with a representative vector may be able to support preclinical safety for purposes of IND submission. Subsequent to this discussion, we submitted proposed protocols for GLP toxicology and biodistribution studies for OTAT's review in connection with a Pre-IND meeting, and OTAT agreed that a single GLP toxicology study could support IND submission. In this GLP toxicology study, we administered our ChAdV and the SAM vectors to Indian Rhesus macaques. The heterologous prime-boost immunotherapy approach when administered intramuscularly was well tolerated at the clinical maximal dose of each platform, with some animals presenting flu-like symptoms. Preclinical chemistry findings include a transient increase in select cytokines, which resolved rapidly. Based upon these IND-enabling results, we do not anticipate the FDA will require additional preclinical testing prior to our proposed Phase 1 clinical study of GRANITE-001.

Clinical Regulatory

In our Pre-IND meeting with OTAT, the FDA previewed Clinical Protocol GO-004 and confirmed that the overall design appeared reasonable, while providing comments on the study populations and dose determination which we have incorporated into the protocol. OTAT also agreed with our dose limiting toxicity assessment criteria, while reserving comment on the starting dose and dose escalation pending the completion of planned preclinical studies. Based on our IND-enabling preclinical results, we intend to include these elements in the protocol which, if authorized by the FDA in our IND submission for GRANITE-001, may permit a faster progression and fewer patients to reach the clinical protocol's combination cohort (Phase 1, Part C).

Regulatory Chemistry, Manufacturing & Controls

In a Type-C Facilities meeting with the FDA's CBER Division of Manufacturing and Product Quality, or DMPQ, we obtained FDA feedback on our proposed design for the multi-use clinical manufacturing facility in Pleasanton, California. Importantly, the FDA concurred with our plan to build a facility designed to accommodate manufacture of multiple patient-specific lots in parallel within the same manufacturing suite, which we expect will provide a substantial increase in scalability within a

smaller allocation of cleanrooms. At our subsequent Pre-IND meeting with OTAT, the FDA agreed with our proposed use of select rapid release testing methods in which we proposed replacing standard cell-culture based tests with faster polymerase chain reaction methods. As agreed with the FDA, we plan to submit qualification of these methods in our IND submission for GRANITE-001. The FDA also agreed that our proposed stability program was generally acceptable to support the proposed Phase 1 clinical study of GRANITE-001, where only one representative patient lot per year will be placed on product stability during conduct of the clinical program.

Employees

As of July 31, 2018, we had 99 full-time employees, including a total of 33 employees with M.D. or Ph.D. degrees. Within our workforce, 84 employees are engaged in research and development and 15 are engaged in business development, finance, legal, human resources, facilities, information technology and general management and administration. None of our employees are represented by labor unions or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Facilities

Our corporate headquarters are located in Emeryville, California, where we lease and occupy approximately 13,100 square feet of office and laboratory space. The current term of our Emeryville lease expires in March 2023, with an option to extend the term through March 2026. We also lease approximately 13,900 square feet of office and laboratory space in Cambridge, Massachusetts. The current term of our Cambridge lease expires in April 2022, with an option to extend the term through April 2025.

We lease a manufacturing facility in Pleasanton, California, where we occupy approximately 42,600 square feet of space. The current term of our lease expires in November 2024, with an option to extend the term through November 2029.

We believe our existing facilities 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 likely to have a material adverse effect on our business. Regardless of outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

MANAGEMENT

Executive Officers and Directors

The following table sets forth information regarding our executive officers and directors as of July 31, 2018:

| <u>Name</u> | <u>Age</u> | <u>Position(s)</u> |
|---|------------|--|
| Executive Officers and Employee Director | | |
| Andrew Allen, M.D., Ph.D. | 52 | President, Chief Executive Officer and Director |
| Jayant Aphale, Ph.D. | 57 | Executive Vice President, Technical Operations |
| Jean-Marc Bellemin | 45 | Executive Vice President, Chief Financial Officer |
| Matthew Hawryluk, Ph.D. | 40 | Executive Vice President, Chief Business Officer |
| Erin Jones | 46 | Senior Vice President, Global Head of Regulatory Affairs and Quality Assurance |
| Karin Jooss, Ph.D. | 53 | Executive Vice President of Research, Chief Scientific Officer |
| Raphaël Rousseau, M.D., Ph.D. | 49 | Executive Vice President, Chief Medical Officer |
| Roman Yelensky, Ph.D. | 40 | Executive Vice President, Chief Technology Officer |
| Non-Employee Directors | | |
| Richard Heyman, Ph.D. | 60 | Director |
| Steve Kroghes | 50 | Director |
| Judith Li | 34 | Director |
| Nicholas Simon | 64 | Director |
| Peter Svenilson | 56 | Director |
| Thomas Woiwode, Ph.D. | 46 | Director |

Executive Officers and Employee Director

Andrew Allen, M.D., Ph.D. co-founded Gritstone Oncology, Inc. and has served as our President and Chief Executive Officer and a member of our board of directors since August 2015. Prior to Gritstone, in April 2009, Dr. Allen co-founded Clovis Oncology, Inc., or Clovis, a public pharmaceutical development company, and served as its executive vice president of clinical and preclinical development and chief medical officer from April 2009 to July 2015. Prior to that, he was chief medical officer at Pharmion Corporation from 2006 to 2008. Previously, Dr. Allen served in clinical development leadership roles at Chiron Corporation and Abbott Laboratories, and worked at McKinsey & Company, where he advised life science companies on strategic issues. He currently serves on the board of directors of Epizyme, Inc., a publicly traded biopharmaceutical company, Sierra Oncology, Inc., a public biopharmaceutical company, and Revitope Inc., a privately-held biotechnology company. Dr. Allen previously served on the board of directors of Cell Design Labs, a private biotechnology company, from November 2015 until its acquisition by Gilead Sciences, Inc. in December 2017. Dr. Allen qualified in medicine at Oxford University and received a Ph.D. in immunology from Imperial College of Science, Technology and Medicine in London. We believe Dr. Allen is qualified to serve on our board of directors due to his educational experience and his experience as a senior executive of biotechnology and pharmaceutical companies, including his service as our chief executive officer.

Jayant Aphale, Ph.D. has served as our Executive Vice President, Technical Operations since March 2018. Prior to Gritstone, from December 2011 to March 2018, Dr. Aphale served as vice president, technical operations for Sarepta Therapeutics, Inc., a public biopharmaceutical company.

Previously, he held senior manufacturing and technical operations roles at GlaxoSmithKline plc, Enobia Pharma Corp., Acambis Inc., Wyeth Pharmaceuticals, Inc., FUJIFILM Diosynth Biotechnologies USA, Inc. and F. Hoffmann-La Roche AG, or Roche. Dr. Aphale received his B.S. in microbiology from the University of Pune in India, his Ph.D. in microbiology from Ohio State University and an M.B.A. in finance and strategy from the University of North Carolina.

Jean-Marc Bellemin has served as our Executive Vice President of Finance and Chief Financial Officer since January 2018. Prior to Gritstone, from January 2008 to December 2017, Mr. Bellemin served as senior vice president, market access, business solutions and services of Actelion Pharmaceuticals US Inc., or Actelion, a biotechnology company, until Actelion was acquired by Johnson & Johnson in 2017. Prior to Actelion, Mr. Bellemin held several financial leadership roles at Guerbet Group. Mr. Bellemin received a two-year university degree in economics, a master's degree in finance from Université Paris Dauphine, a postgraduate degree in finance and accounting from Université Paris II Panthéon-Sorbonne and an M.B.A. from the ESSEC Business School in Paris, France.

Matthew Hawryluk, Ph.D. has served as our Executive Vice President and Chief Business Officer since October 2015. Prior to Gritstone, from April 2011 to October 2015, Dr. Hawryluk held positions of increasing responsibility at Foundation Medicine, Inc., or Foundation Medicine, a public molecular diagnostics company, most recently serving as vice president, corporate and business development. Previously, he held roles in business development, marketing and product management across multiple divisions of Thermo Fisher Scientific, Inc. Dr. Hawryluk received a B.S. from the University of Notre Dame, a Ph.D. in cell biology and protein biochemistry from the University of Pittsburgh School of Medicine and an M.B.A. at Carnegie Mellon University's Tepper School of Business as a Swartz Entrepreneurial Fellow.

Erin Jones has served as our Senior Vice President, Global Head of Regulatory Affairs and Quality Assurance since May 2016. Prior to Gritstone, from July 2014 to April 2016, Mr. Jones served as vice president, global head of regulatory affairs, medical writing, pharmacology and toxicology at Puma Biotechnology, Inc., or Puma, a public biopharmaceutical company. Prior to Puma, Mr. Jones served as director, regulatory affairs at BioMarin Pharmaceutical Inc. from July 2012 to July 2014. Earlier in his career, Mr. Jones held various positions at Genentech, Inc., or Genentech, a biotechnology corporation and subsidiary of Roche, including head of regulatory intelligence and leader of the HER Franchise Regulatory Group. Mr. Jones received a B.S. in microbiology and chemistry from the University of Pittsburgh and an M.S. in computer systems from Pennsylvania State University.

Karin Jooss, Ph.D. has served as our Executive Vice President of Research and Chief Scientific Officer since April 2016. Prior to Gritstone, from May 2009 to April 2016, Dr. Jooss served as head of cancer immuno-therapeutics in the vaccine immuno-therapeutics department at Pfizer, Inc., or Pfizer, a public pharmaceutical company, where she was also a member of the vaccine immuno-therapeutics leadership team and served as head of the immuno-pharmacology team. Prior to joining Pfizer, Dr. Jooss served as vice president of research at Cell Genesys, Inc., or Cell Genesys, from June 2005 to April 2009, and as senior director of research at Cell Genesys from July 2001 to June 2005. She is on the editorial board of Molecular Therapy and the Journal of Gene Medicine and is a member of the Immunology and Educational Committee of the American Society of Gene & Cell Therapy and the Industry Task Force of the Society for Immunotherapy of Cancer. Dr. Jooss received her diploma in theoretical medicine from the University of Marburg in Germany, a Ph.D. in molecular biology from the University of Marburg in Germany and performed postgraduate work in gene therapy and immunology at the University of Pennsylvania.

Raphaël Rousseau, M.D., Ph.D. has served as our Executive Vice President, Chief Medical Officer since April 2017. Prior to Gritstone, from July 2012 to March 2017, Dr. Rousseau served as

senior group medical director and global franchise head, pediatrics of Genentech. Before Genentech, Dr. Rousseau was senior medical director and lead of the pediatric global development team at Roche from October 2010 to June 2012, and international medical leader, hematology, at Roche from January 2009 to September 2010. Before joining Roche, Dr. Rousseau was a professor of medical and pediatric oncology at the Université Claude Bernard in Lyon, France. At the Léon Bérard Comprehensive Cancer Center in Lyon, Dr. Rousseau was head of the pediatric translational research program. Earlier in his career, he was a clinical fellow at Texas Children's Cancer Center and a research fellow at the Center for Cell and Gene Therapy at Baylor College of Medicine in Houston. He received a Ph.D. in therapeutic biotechnologies at the Université Denis Diderot and an M.D. from Université René Descartes, both in Paris. He is board certified in pediatrics and has a sub-specialty certification in pediatric hematology-oncology.

Roman Yelensky, Ph.D. has served as our Executive Vice President, Chief Technology Officer since October 2015. He joined Gritstone at its inception in October 2015 as executive vice president of sequencing and bioinformatics. Prior to Gritstone, from July 2010 to September 2015, Dr. Yelensky served as vice president of biomarker and companion diagnostic development at Foundation Medicine. Prior to Foundation Medicine, Dr. Yelensky was a senior scientist in biomarker development at Novartis AG from April 2009 to July 2010. He received a B.A. in computer science from Cornell University, an M.S. in computer science from Stanford University and a Ph.D. in bioinformatics and integrative genomics from the Harvard-MIT Division of Health Sciences and Technology.

Non-Employee Directors

Richard Heyman, Ph.D. has served as a member of our board of directors since November 2015. Dr. Heyman is executive chairman and co-founder of Metacrine, Inc., a biotechnology company developing new therapeutics for the treatment of diabetes and related metabolic disorders. From August 2013 to April 2015, he served as president and chief executive officer of Seragon Pharmaceuticals Inc., or Seragon, a privately-held biotechnology company, which was acquired by Genentech in 2014. Prior to Seragon, in 2009 he co-founded and served as president and chief executive officer of Aragon Pharmaceuticals, Inc., or Aragon, until it was purchased by Johnson & Johnson in 2013. Earlier in his career, Dr. Heyman co-founded and served as chief scientific officer of X-Ceptor Therapeutics, Inc. and was vice president of research at Ligand Pharmaceuticals, Inc. He is the author or inventor on more than 120 publications and patents. Dr. Heyman serves as vice chairman of the board of trustees of the Salk Institute for Biological Studies, or the Salk Institute, and is a board member of BIOCOM Life Sciences Association of California. He is also a member of the Therapeutic Advisory Board for aTyr Pharma, Inc. and serves on the Executive Committee of the University of California, San Diego Moores Cancer Center. Dr. Heyman received a B.S. in chemistry from the University of Connecticut and a Ph.D. in pharmacology from the University of Minnesota. He was an NIH post-doctoral fellow and staff scientist at the Salk Institute. We believe that Dr. Heyman is qualified to serve on our board of directors due to his educational background and his experience as a board member and senior executive of biotechnology and pharmaceutical companies.

Steve Krognnes has served as a member of our board of directors since July 2018. Mr. Krognnes has served as chief financial officer of Denali Therapeutics Inc., or Denali, since October 2015. Mr. Krognnes joined Denali from Genentech, where he served as chief financial officer and a member of the executive committee from April 2009 to September 2015. Mr. Krognnes also oversaw Genentech's site services organization between 2011 and 2015, and Genentech's information technology organization between 2009 and 2011. He chaired the Genentech Access to Care Foundation between 2009 and 2015. From January 2004 to April 2009, Mr. Krognnes served as head of mergers and acquisitions and a member of the finance executive committee at Roche, a Swiss biotechnology company. From July 2002 to December 2003, Mr. Krognnes served as director of mergers and acquisitions at Danske Bank

based in Norway. From April 2000 to June 2002, he was a venture capitalist with Pylonia Ventures, a Swedish venture investments company. Prior to that, Mr. Krognnes worked as a consultant at McKinsey & Company and an investment banker at Goldman Sachs, based in London and Boston. Mr. Krognnes currently serves as a member of the boards of directors of Corvus Pharmaceuticals, a publicly traded biopharmaceutical company, and RLS Global AB, a Swedish life sciences company. Mr. Krognnes served as a board member of the California Life Sciences Association between 2010 and 2015, and the California Academy of Sciences, a private scientific and educational institution, between 2014 and 2018. He received his M.B.A. from Harvard Business School and his B.S. in economics from The Wharton School of the University of Pennsylvania. We believe Mr. Krognnes is qualified to serve on our board of directors due to his experience as a board member and senior executive of biotechnology and pharmaceutical companies.

Judith Li has served as a member of our board of directors since September 2017. Ms. Li has served as a partner at Lilly Asia Ventures, or LAV, which is based in Hong Kong and Shanghai and focuses on early and growth stage investments across biopharmaceuticals, medical devices, and diagnostics both domestically and cross-border, since 2013. Judith currently holds board appointments at a variety of LAV's private portfolio companies, including Just Biotherapeutics, Inc., Veritas Genetics Inc., and Nextcure, Inc. From April 2014 to October 2017, she served on the board of Crown BioScience Inc., a biotechnology company which was publicly listed on the Taiwan Stock Exchange until it was acquired in December 2017. Previously, Ms. Li served as a senior business analyst at McKinsey & Company, worked in hospital administration at Partners Healthcare, and co-founded an interventional nephrology medical device venture. Judith holds a B.A. in biology from Harvard and an M.B.A. from Harvard Business School. We believe that Ms. Li is qualified to serve on our board of directors due to her experience as a board member of biotechnology and pharmaceutical companies, and her experience as an investor in new life sciences companies.

Nicholas Simon has served as a member of our board of directors since September 2015. Mr. Simon has been a managing director of Clarus Ventures, LLC, or Clarus, a venture capital firm focused on life sciences companies, since the firm's inception in 2005. Prior to Clarus, Mr. Simon was a general partner at MPM Capital, Inc., a healthcare venture capital firm. He has more than 20 years of operating and investment experience in the biopharmaceutical industry including serving as vice president of business and corporate development at Genentech from 1989 to 2000. In addition to Gritstone, Mr. Simon is currently a member of the board of directors Nuvelution Pharma, Inc., a private pharmaceutical company, as well as chairman of the board of Sientra, Inc., a public medical aesthetics company. He has also been a member of the board of directors of numerous private and public life sciences companies including Achillion Pharmaceuticals, Inc., Avanir Pharmaceuticals, Inc., Barrier Therapeutics, Inc., Biovitrum AB, CoTherix, Inc., InterMune, Inc., Pearl Therapeutics Inc., QuatRx Pharmaceuticals Co., Rigel Pharmaceuticals, Inc., and Sangstat Medical Corporation. Mr. Simon is also a member of the foundation board at the Gladstone Institute, a private not-for-profit research institute affiliated with the University of California, San Francisco. Mr. Simon received a B.S. in microbiology from the University of Maryland and an M.B.A. from Loyola University. We believe that Mr. Simon is qualified to serve on our board of directors due to his experience as a board member of biotechnology and pharmaceutical companies, and his experience as an investor in new life sciences companies.

Peter Svenilson has served as a member of our board of directors since September 2015. In February 2007, Mr. Svenilson founded The Column Group, LP, or The Column Group, a San Francisco-based biotechnology venture capital firm, and currently serves as its managing partner. Mr. Svenilson also currently serves as a member of the board of Immune Design Corp., a public late-stage immunotherapy company. In addition, Mr. Svenilson serves on the boards of a number of private companies, including serving as chairman of the board of ORIC Pharmaceuticals, Inc., a private biopharmaceutical company and as a member of the boards of member of NGM Biopharmaceuticals,

Inc., Constellation Pharmaceuticals, Inc. and Ribon Therapeutics, Inc. Previously, he served as chairman of the board of Seragon from January 2008 until it was acquired by Genentech in August 2014. He was the chairman of the board of Aragon from May 2009 until it was acquired by Johnson & Johnson in August 2013. Mr. Svennilson was also a board member of PTC Therapeutics, Inc. from 2012 until 2014. Prior to founding The Column Group, he founded Three Crowns Capital, where he served as its managing partner from June 1996 to February 2007. From 1996 to 2006, Mr. Svennilson served as a board member of multiple biotechnology companies, including Rosetta Inpharmatics LLC, ChemoCentryx, Inc. and Somalogic, Inc. Prior to founding Three Crowns Capital, from 1987 to 1993 he was the associate managing director in charge of European Investment Banking Origination at Nomura Securities in London. Mr. Svennilson is currently a trustee for the Institute for Advanced Study in Princeton, New Jersey. Mr. Svennilson received an M.B.A. from the Stockholm School of Economics and Finance. We believe that Mr. Svennilson is qualified to serve on our board of directors due to his experience in the venture capital industry and in serving as a director of other public life science companies.

Thomas Woiwode, Ph.D. has served as a member of our board of directors since September 2015. Dr. Woiwode has been with Versant Venture Management, LLC, or Versant Ventures, a healthcare investment firm, since 2002 in various capacities, serving as a managing director since July 2014 and previously as a venture partner from June 2011 to July 2014. He has also served in a number of operating roles over this time, most recently as the chief operating officer of Okairos AG, or Okairos, a biopharmaceutical company developing genetic vaccines for major infectious diseases, from April 2011 until May 2013. Prior to Okairos, Dr. Woiwode co-founded EuroVentures, a wholly owned biotechnology incubator within Versant Ventures, and in this role, served as the founding chief business officer for three biotechnology companies created within Versant Ventures. Before joining Versant Ventures, Dr. Woiwode also served as a research scientist at Xenoport, Inc. Dr. Woiwode currently serves on the board of directors of CRISPR Therapeutics AG and Adverum Biotechnologies, Inc., and served on the board of directors of Audentes Therapeutics, Inc. from July 2013 to July 2017. Dr. Woiwode also serves on the board of directors of several private companies. Dr. Woiwode holds a B.A. in English and a B.S. in Chemistry from the University of California, Berkeley and a Ph.D. in Organic Chemistry as an NSF Fellow from Stanford University. We believe that Dr. Woiwode is qualified to serve on our board of directors due to his educational background, his experience as a board member and senior executive of biotechnology and pharmaceutical companies, and his experience as an investor in new life sciences companies.

Board Composition

Director Independence

Our board of directors currently consists of seven members. Our board of directors has determined that all of our directors, other than Dr. Allen, qualify as “independent” directors in accordance with The Nasdaq Global Market listing requirements. Dr. Allen is not considered independent because he is an employee of Gritstone Oncology, Inc. The Nasdaq Global Market’s independence definition includes a series of objective tests, such as that the director is not, and has not been for at least three years, one of our employees and that neither the director nor any of his or her family members has engaged in various types of business dealings with us. In addition, as required by The Nasdaq Global Market rules, our board of directors has made a subjective determination as to each independent director that no relationships exists that, in the opinion of our board of directors, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In making these determinations, our board of directors reviewed and discussed information provided by the directors and us with regard to each director’s business and personal activities and relationships as they may relate to us and our management. There are no family relationships among any of our directors or executive officers.

Classified Board of Directors

In accordance with our amended and restated certificate of incorporation to be in effect immediately prior to the consummation of this offering, our board of directors will be divided into three classes with staggered, three-year terms. At each annual meeting of stockholders, the successors to directors whose terms then expire will be elected to serve from the time of election and qualification until the third annual meeting following election. Effective upon the consummation of this offering, we expect that our directors will be divided among the three classes as follows:

- the Class I directors will be Ms. Li and Dr. Allen, and their terms will expire at the annual meeting of stockholders to be held in 2019;
- the Class II directors will be Dr. Heyman and Messrs. Simon and Woiwode, and their terms will expire at the annual meeting of stockholders to be held in 2020; and
- the Class III directors will be Messrs. Krognnes and Svenilsson, and their terms will expire at the annual meeting of stockholders to be held in 2021.

Our amended and restated certificate of incorporation will provide that the authorized number of directors may be changed only by resolution of the board of directors. Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors. The division of our board of directors into three classes with staggered three-year terms may delay or prevent a change of our management or a change in control of our company.

Voting Arrangements

The election of the members of our board of directors is governed by the amended and restated voting agreement, that we entered into with certain holders of our common stock and certain holders of our convertible preferred stock and the related provisions of our amended and restated certificate of incorporation.

Pursuant to the voting agreement and these provisions the holders of our Series A convertible preferred stock, voting as a separate class, have the right to elect three directors to our board of directors, the holders of our Series B convertible preferred stock, voting as a separate class, have the right to elect one director to our board of directors, the holders of our common stock, voting as a separate class, have the right to elect one director to our board of directors and the holders of our common stock and our convertible preferred stock, voting together as a single class, have the right to elect the balance of the total number of our directors, which are designated as follows:

- one member designated by Versant Ventures and elected by the holders of a majority of our Series A convertible preferred stock, voting as a separate class, for which Dr. Woiwode has been designated;
- one member designated by The Column Group and elected by the holders of a majority of our Series A convertible preferred stock, voting as a separate class, for which Mr. Svenilsson has been designated;
- one member designated by Clarus and elected by the holders of a majority of our Series A convertible preferred stock, voting as a separate class, for which Mr. Simon has been designated;
- one member designated by LAV and elected by the holders of a majority of our Series B convertible preferred stock, voting as a separate class, for which Ms. Li has been designated;
- one member elected by the holders of a majority of the shares of our common stock, voting as a separate class, who shall be our then-serving Chief Executive Officer, for which Dr. Allen has been designated; and

- two members designated by the other members of our board of directors and elected by the holders of a majority of the shares of our common stock and convertible preferred stock, voting together as a single class, for which Dr. Heyman and Mr. Krognnes have been designated, with one vacancy.

The holders of our common stock and convertible preferred stock who are parties to our voting agreement are obligated to vote for such designees indicated above. The provisions of this voting agreement will terminate upon the consummation of this offering and our certificate of incorporation will be amended and restated, after which there will be no further contractual obligations or charter provisions regarding the election of our directors. Our directors hold office until their successors have been elected and qualified or appointed, or the earlier of their death, resignation or removal.

Leadership Structure of the Board

Our bylaws and corporate governance guidelines provide our board of directors with flexibility to combine or separate the positions of Chairman of the board of directors and Chief Executive Officer and to implement a lead director in accordance with its determination that utilizing one or the other structure would be in the best interests of our company. _____ presides over the executive sessions of the board of directors and acts as a liaison between management and the board of directors.

Our board of directors has concluded that our current leadership structure is appropriate at this time. However, our board of directors will continue to periodically review our leadership structure and may make such changes in the future as it deems appropriate.

Role of Board in Risk Oversight Process

Risk assessment and oversight are an integral part of our governance and management processes. Our board of directors encourages management to promote a culture that incorporates risk management into our corporate strategy and day-to-day business operations. Management discusses strategic and operational risks at regular management meetings, and conducts specific strategic planning and review sessions during the year that include a focused discussion and analysis of the risks facing us. Throughout the year, senior management reviews these risks with the board of directors at regular board meetings as part of management presentations that focus on particular business functions, operations or strategies, and presents the steps taken by management to mitigate or eliminate such risks.

Our board of directors does not have a standing risk management committee, but rather administers this oversight function directly through our board of directors as a whole, as well as through various standing committees of our board of directors that address risks inherent in their respective areas of oversight. While our board of directors is responsible for monitoring and assessing strategic risk exposure, our audit committee is responsible for overseeing our major financial risk exposures and the steps our management has taken to monitor and control these exposures. The audit committee also monitors compliance with legal and regulatory requirements and considers and approves or disapproves any related person transactions. Our nominating and corporate governance committee monitors the effectiveness of our corporate governance guidelines. Our compensation committee assesses and monitors whether any of our compensation policies and programs has the potential to encourage excessive risk-taking.

Board Committees

Audit Committee

Our audit committee oversees our corporate accounting and financial reporting process. Among other matters, the audit committee:

- appoints our independent registered public accounting firm;
- evaluates the independent registered public accounting firm's qualifications, independence and performance;
- determines the engagement of the independent registered public accounting firm;
- reviews and approves the scope of the annual audit and the audit fee;
- discusses with management and the independent registered public accounting firm the results of the annual audit and the review of our quarterly financial statements;
- approves the retention of the independent registered public accounting firm to perform any proposed permissible non-audit services;
- monitors the rotation of partners of the independent registered public accounting firm on our engagement team in accordance with requirements established by the SEC;
- is responsible for reviewing our financial statements and our management's discussion and analysis of financial condition and results of operations to be included in our annual and quarterly reports to be filed with the SEC;
- reviews our critical accounting policies and estimates;
- reviews all related party transactions on an ongoing basis;
- establishes procedures for the receipt, retention and treatment of complaints received by us regarding accounting, internal controls or auditing matters;
- annually reviews and assesses treasury functions including cash management process;
- discusses on a periodic basis, or as appropriate, with management, our policies and procedures with respect to risk assessment; and
- investigates any matters received, and reports to the Board periodically, with respect to ethics issues, complaints and associated investigations; and
- reviews the audit committee charter and the committee's performance at least annually.

The current members of our audit committee are Messrs. Krognés, Woiwode and Svennilson. Mr. Krognés serves as the chairperson of the committee. All members of our audit committee meet the requirements for financial literacy under the applicable rules and regulations of the SEC and The Nasdaq Global Market. Our board of directors has determined that Mr. Krognés is an audit committee financial expert as defined under the applicable rules of the SEC and has the requisite financial sophistication as defined under the applicable rules and regulations of The Nasdaq Global Market. Under the rules of the SEC, members of the audit committee must also meet heightened independence standards. Our board of directors has determined that each of the members of our audit committee are independent under the applicable rules of the SEC and The Nasdaq Global Market. The audit committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Global Market.

Compensation Committee

Our compensation committee oversees policies relating to compensation and benefits of our officers and employees. The compensation committee reviews and approves or recommends

corporate goals and objectives relevant to compensation of our executive officers (other than our Chief Executive Officer), evaluates the performance of these officers in light of those goals and objectives and approves the compensation of these officers based on such evaluations. The compensation committee also reviews and approves or makes recommendations to our board of directors regarding the issuance of stock options and other awards under our stock plans to our executive officers (other than our Chief Executive Officer). The compensation committee reviews the performance of our Chief Executive Officer and makes recommendations to our board of directors with respect to his compensation and our board of directors retains the authority to make compensation decisions relative to our Chief Executive Officer. The compensation committee will review and evaluate, at least annually, the performance of the compensation committee and its members, including compliance by the compensation committee with its charter. The current members of our compensation committee are Drs. Woiwode and Heyman and Mr. Krognnes. Dr. Heyman serves as the chairman of the committee. Each of the members of our compensation committee is independent under the applicable rules and regulations of The Nasdaq Global Market, is a “non-employee director” as defined in Rule 16b-3 promulgated under the Exchange Act and is an “outside director” as that term is defined in Section 162(m) of the U.S. Internal Revenue Code of 1986, as amended, or Section 162(m). The compensation committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Global Market.

Nominating and Corporate Governance Committee

The nominating and corporate governance committee is responsible for making recommendations to our board of directors regarding candidates for directorships and the size and composition of our board of directors. In addition, the nominating and corporate governance committee is responsible for overseeing our corporate governance policies and reporting and making recommendations to our board of directors concerning governance matters. The current members of our nominating and corporate governance committee are Drs. Heyman and Woiwode and Ms. Li. Ms. Li serves as the chairman of the committee. Each of the members of our nominating and corporate governance committee is an independent director under the applicable rules and regulations of The Nasdaq Global Market relating to nominating and corporate governance committee independence. The nominating and corporate governance committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Global Market.

Compensation Committee Interlocks and Insider Participation

During the year ended December 31, 2017, our compensation committee consisted of Dr. Woiwode and Patrick Mahaffy, a former member of our board of directors. None of the members of our compensation committee during 2017 nor any of the current members of our compensation committee has at any time 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 on our board of directors or compensation committee.

Board Diversity

Upon consummation of this offering, our nominating and corporate governance committee will be responsible for reviewing with the board of directors, on an annual basis, the appropriate characteristics, skills and experience required for the board of directors as a whole and its individual members. In evaluating the suitability of individual candidates (both new candidates and current members), the nominating and corporate governance committee, in recommending candidates for

election, and the board of directors, in approving (and, in the case of vacancies, appointing) such candidates, may take into account many factors, including but not limited to the following:

- personal and professional integrity;
- ethics and values;
- experience in corporate management, such as serving as an officer or former officer of a publicly held company;
- experience in the industries in which we compete;
- experience as a board member or executive officer of another publicly held company;
- diversity of expertise and experience in substantive matters pertaining to our business relative to other board members;
- conflicts of interest; and
- practical and mature business judgment.

Currently, our board of directors evaluates, and following the consummation of this offering will evaluate, each individual in the context of the board of directors as a whole, with the objective of assembling a group that can best maximize the success of the business and represent stockholder interests through the exercise of sound judgment using its diversity of experience in these various areas.

Code of Business Conduct and Ethics

Prior to the consummation of this offering, we will adopt a code of business conduct and ethics that will apply to all of our employees, officers and directors, including those officers responsible for financial reporting. Following the consummation of this offering, the code of business conduct and ethics will be available on our website. We expect that any amendments to the code, or any waivers of its requirements, will be disclosed on our website.

Limitation on Liability and Indemnification Matters

Our amended and restated certificate of incorporation, which will become effective immediately prior to the consummation of this offering, will contain provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duties as directors, except 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;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; or
- any transaction from which the director derived an improper personal benefit.

Each of our amended and restated certificate of incorporation and amended and restated bylaws, which will become effective immediately prior to the consummation of this offering, will provide that we are required to indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law. Our amended and restated bylaws will also obligate us to advance expenses incurred

by a director or officer in advance of the final disposition of any action or proceeding, and 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 that capacity regardless of whether we would otherwise be permitted to indemnify him or her under Delaware law. We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by our board of directors. With specified exceptions, these agreements provide for indemnification for related expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We believe that these bylaw provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain directors' and officers' liability insurance.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against our directors and officers for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and our stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage.

Director Compensation

Historically, we have not had a formalized non-employee director compensation program; however, in 2017, we paid each of Richard Heyman, Ph.D. and Patrick Mahaffy, a former member of our board of directors, an annual retainer of \$48,000 pursuant to offer letters entered into with them in connection with their commencement of service on our board of directors in 2015. We also granted each of Dr. Heyman and Mr. Mahaffy options to purchase our common stock in connection with their commencement of service with us. Each of our other non-employee directors is associated with one of our principal investors and is not compensated for service on our board of directors. In addition, we reimburse our non-employee directors for travel and other necessary business expenses incurred in the performance of their services for us.

2017 Director Compensation Table

| Name | Fees Earned or Paid in Cash (\$) | Option Awards \$(1) | Total (\$) |
|-----------------------|--|---------------------------|------------|
| Richard Heyman, Ph.D. | 48,000 | — | 48,000 |
| Judith Li | — | — | — |
| Patrick Mahaffy(2) | 48,000 | — | 48,000 |
| Nicholas Simon | — | — | — |
| Peter Svennilson | — | — | — |
| Thomas Woiwode, Ph.D. | — | — | — |

- (1) As of December 31, 2017, Dr. Heyman and Mr. Mahaffy held 181,820 and 446,995 shares of our common stock, respectively, subject to repurchase at the original purchase price thereof in the event their service were to terminate with us. These shares were acquired upon exercise of stock options prior to vesting.
- (2) In May 2018, Mr. Mahaffy resigned from our board of directors.

We intend to approve and implement a compensation policy for our non-employee directors, or the Director Compensation Program, to be effective in connection with the consummation of this offering. Pursuant to the Director Compensation Program, our non-employee directors will receive cash compensation as follows:

- Each non-employee director will receive an annual cash retainer in the amount of \$ per year.

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- The Chairperson will receive an additional annual cash retainer in the amount of \$ per year.
- The chairperson of the audit committee will receive additional annual cash compensation in the amount of \$ per year for such chairperson's service on the audit committee. Each non-chairperson member of the audit committee will receive additional annual cash compensation in the amount of \$ per year for such member's service on the audit committee.
- The chairperson of the compensation committee will receive additional annual cash compensation in the amount of \$ per year for such chairperson's service on the compensation committee. Each non-chairperson member of the compensation committee will receive additional annual cash compensation in the amount of \$ per year for such member's service on the compensation committee.
- The chairperson of the nominating and corporate governance committee will receive additional annual cash compensation in the amount of \$ per year for such chairperson's service on the nominating and corporate governance committee. Each non-chairperson member of the nominating and corporate governance committee will receive additional annual cash compensation in the amount of \$ per year for such member's service on the nominating and corporate governance committee.

Under the Director Compensation Program, each non-employee director will automatically be granted an option to purchase shares of our common stock upon the director's initial appointment or election to our board of directors, referred to as the Initial Grant, and an option to purchase shares of our common stock automatically on the date of each annual stockholder's meeting thereafter, referred to as the Annual Grant. The Initial Grant will vest substantially equal monthly installments from the date of grant, subject to continued service through each applicable vesting date. The Annual Grant will vest on the earlier of the first anniversary of the date of grant or the date of the next annual stockholder's meeting to the extent unvested as of such date, subject to continued service through each applicable vesting date.

EXECUTIVE COMPENSATION

This section discusses the material components of the executive compensation program for our executive officers who are named in the “2017 Summary Compensation Table” below. In 2017, our “named executive officers” and their positions were as follows:

- Andrew Allen, M.D., Ph.D., President and Chief Executive Officer;
- Karin Jooss, Ph.D., Executive Vice President and Chief Scientific Officer; and
- Raphaël Rousseau, M.D., Executive Vice President and Chief Medical Officer.

This discussion may contain forward-looking statements that are based on our current plans, considerations, expectations and determinations regarding future compensation programs. Actual compensation programs that we adopt following the completion of this offering may differ materially from the currently planned programs summarized in this discussion. As an “emerging growth company” as defined in the JOBS Act, we are not required to include a Compensation Discussion and Analysis section and have elected to comply with the scaled disclosure requirements applicable to emerging growth companies.

2017 Summary Compensation Table

The following table sets forth information concerning the compensation of our named executive officers for the year ended December 31, 2017.

| <u>Name and Principal Position</u> | <u>Year</u> | <u>Salary (\$)</u> | <u>Option Awards (\$)(1)</u> | <u>Non-Equity Incentive Plan Compensation (\$)(2)</u> | <u>All Other Compensation (\$)(3)</u> | <u>Total</u> |
|---|-------------|--------------------|------------------------------|---|---------------------------------------|--------------|
| Andrew Allen, M.D., Ph.D. <i>President and Chief Executive Officer</i> | 2017 | 435,625 | — | 156,825 | — | 592,450 |
| Karin Jooss, Ph.D. <i>EVP and Chief Scientific Officer</i> | 2017 | 369,000 | — | 116,235 | 18,982 | 504,217 |
| Raphaël Rousseau, M.D., Ph.D.(4) <i>EVP and Chief Medical Officer</i> | 2017 | 283,334 | 286,137 | 89,250 | 11,896 | 670,617 |

- (1) Amounts reflect the full grant-date fair value of stock options granted during 2017 computed in accordance with ASC Topic 718, rather than the amounts paid to or realized by the named individual. See Note 10 of the audited financial statements included in this prospectus for the assumptions used in calculating these amounts.
- (2) Amounts represent the annual performance-based cash bonuses earned by our named executive officers based on the achievement of certain corporate performance objectives during 2017. These amounts were paid to the named executive officers in early 2018. Please see the descriptions of the annual performance bonuses paid to our named executive officers under “2017 Bonuses” below.
- (3) Amount reported for Dr. Jooss represents \$12,537 of reimbursed commuting expenses and \$6,445 paid to reimburse taxes incurred in connection with such reimbursement. Amount reported for Dr. Rousseau represents \$7,120 of reimbursed attorney fees incurred in connection with the negotiation of his offer letter and \$4,776 paid to reimburse taxes incurred in connection with such reimbursement.
- (4) Dr. Rousseau commenced employment with us on April 17, 2017.

Narrative to Summary Compensation Table

2017 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.

For fiscal year 2017, Dr. Allen's annual base salary was \$437,750, Dr. Jooss's base salary was \$370,800, and Dr. Rousseau's base salary was \$400,000. The annual base salaries of Dr. Allen and Dr. Jooss were increased 3% from their respective levels in 2016, and Dr. Rousseau's base salary was determined by the Board as a result of negotiations in connection with his commencement of employment with us in April 2017. In early 2018, the Board approved the following base salaries for our named executive officers, effective March 1, 2018: for Dr. Allen, \$475,000; for Dr. Jooss, \$381,924; and for Dr. Rousseau, \$412,000.

2017 Bonuses

We maintain an annual performance-based cash bonus program in which each of our named executive officers participated in 2017. Each named executive officer's target bonus is expressed as a percentage of base salary which can be achieved by meeting corporate goals at target level. The 2017 annual bonuses for Dr. Allen, Dr. Jooss and Dr. Rousseau were targeted at 40%, 35% and 35% of their respective base salaries. Dr. Allen's and Dr. Jooss's target bonuses remained unchanged from their respective 2016 levels, and Dr. Rousseau's target bonus was determined by the Board as a result of negotiations in connection with his commencement of employment with us in April 2017.

For 2017, our named executive officers were eligible to earn annual cash bonuses based on the achievement of certain corporate performance objectives approved by the Compensation Committee and the Board. In early 2018, the Board reviewed and approved the achievement of our 2017 corporate goals at 90%. Based on this level of achievement, our named executive officers were paid performance bonuses at 90% of their targeted amounts.

The actual annual cash bonuses awarded to each named executive officer for 2017 performance are set forth above in the Summary Compensation Table in the column titled "Non-Equity Incentive Plan Compensation." Dr. Rousseau's annual bonus was based on his actual base salary earnings for 2017.

Equity Compensation

In May 2017, pursuant to his offer letter with us dated November 15, 2016, the Board granted Dr. Rousseau an option to purchase 1,140,750 shares of our common stock pursuant to our 2015 Equity Incentive Plan. The option vests as to 25% of the shares underlying the option on the first anniversary of Dr. Rousseau's employment commencement date, and as to 1/48th of the shares underlying the option on each monthly anniversary thereafter, subject to Dr. Rousseau's continued service to the Company on each applicable vesting date. In addition, the option is subject to the accelerated vesting provision set forth in Dr. Rousseau's offer letter, as described below under "Executive Compensation Arrangements."

Drs. Allen and Jooss were not granted equity awards in 2017.

We intend to adopt a 2018 Incentive Award Plan, referred to below as the 2018 Plan, in order to facilitate the grant of cash and equity incentives to directors, employees (including our named executive officers) and consultants of our company and certain of its affiliates and to enable us to obtain and retain services of these individuals, which is essential to our long-term success. We expect that the 2018 Plan will be effective on the date on which it is adopted by our board of directors, subject to approval of such plan by our stockholders. For additional information about the 2018 Plan, please see the section titled "Equity Incentive Plans" below.

Other Elements of Compensation

Retirement Savings and Health and Welfare Benefits

We maintain a 401(k) retirement savings plan for our employees, including our named executive officers, who satisfy certain eligibility requirements. Our named executive officers are eligible to participate in the 401(k) plan on the same terms as other full-time employees. Currently, we may match (in our discretion) contributions made by participants in the 401(k) plan in the amount equal to 50% of up to 4% of the participant's eligible compensation contributed to the plan, not to exceed 2% of a participant's eligible compensation. We believe that providing a vehicle for tax-deferred retirement savings through our 401(k) plan adds to the overall desirability of our executive compensation package and further incentivizes our employees, including our named executive officers, in accordance with our compensation policies.

All of our full-time employees, including our named executive officers, are eligible to participate in our health and welfare plans, including medical, dental and vision benefits; medical and dependent care flexible spending accounts; short-term and long-term disability insurance; and life and AD&D insurance.

Perquisites and Other Personal Benefits

We provide limited perquisites to our named executive officers when our compensation committee determines that such perquisites are necessary or advisable to fairly compensate or incentivize our employees. In 2017, we reimbursed expenses incurred by Dr. Jooss in commuting from her home in San Diego, California to our headquarters in Emeryville, California. We also reimbursed legal expenses incurred by Dr. Rousseau in negotiating his offer letter.

Outstanding Equity Awards at Fiscal Year-End

The following table summarizes the number of shares of common stock underlying outstanding equity awards for each named executive officer as of December 31, 2017.

| Name | Grant Date | Option Awards | | | | Stock Awards | |
|------------------------------|--------------|---|---|----------------------------|------------------------|---|---|
| | | Number of Securities Underlying Unexercised Options (#) Exercisable | Number of Securities Underlying Unexercised 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 (\$)(4) |
| Andrew Allen, M.D., Ph.D. | 9/4/2015(1) | — | — | — | — | 4,166,667 | |
| Karin Jooss, Ph.D. | 4/15/2016(2) | — | — | — | — | 1,295,584 | |
| Raphaël Rousseau, M.D, Ph.D. | 5/18/2017(3) | — | 1,140,750 | 0.11 | 5/17/2027 | — | |

- (1) Dr. Allen acquired 10,000,000 restricted shares of our common stock pursuant to a founder stock purchase agreement. The restricted shares vest and our repurchase right lapses in respect of 12.5% of the total shares on the six month anniversary of the vesting commencement date (August 1, 2015), and in respect of 1/48th of the total shares monthly thereafter, subject to Dr. Allen's continued service with us through each vesting date.
- (2) Represents restricted shares acquired upon early exercise of a stock option covering 2,221,000 shares of our common stock. The restricted shares vest and our repurchase right lapses in respect of 25% of the total shares on the first anniversary of the vesting commencement date (April 15, 2016), and in respect of 1/48th of the total shares monthly thereafter, subject to Dr. Jooss's continued service with us through each vesting

date. The restricted shares are subject to the vesting acceleration provision set forth in Dr. Jooss's offer letter, as described below under "Equity Compensation Arrangements."

- (3) The option vests in respect of 25% of the underlying shares on the first anniversary of the vesting commencement date (April 17, 2017), and in respect of 1/48th of the underlying shares monthly thereafter, subject to Dr. Rousseau's continued service with us through each vesting date. The option is subject to the vesting acceleration provision set forth in Dr. Rousseau's offer letter, as described below under "Equity Compensation Arrangements."
- (4) The market value of our common stock is based upon the assumed initial public offering price of \$ per share, which is the midpoint of the range set forth on the cover of this prospectus.

Executive Compensation Arrangements

As of December 31, 2017, we were party to offer letters with each of our named executive officers.

Dr. Allen. We entered into an offer letter with Dr. Allen on October 7, 2015 in connection with his appointment as our President and Chief Executive Officer, which sets forth his initial base salary and benefit plan participation.

Dr. Jooss. We entered into an offer letter with Dr. Jooss on February 29, 2016 in connection with her appointment as Executive Vice President and Chief Scientific Officer, which sets forth her initial base salary, annual bonus opportunity, benefit plans participation, initial equity award, and a \$30,000 signing bonus that was paid in April 2016. The offer letter provides for an initial stock option grant covering 2,221,000 shares of our common stock, which was granted in April 2016.

Under Dr. Jooss's offer letter, if she is terminated without "cause" or resigns for "good reason" (as each is defined in the offer letter), she will be eligible to receive six months of continued base salary (and up to nine months of base salary if the Company fails to give 90 days' advance written notice to Dr. Jooss prior to any such termination). In addition, if Dr. Jooss is terminated without "cause" or resigns for "good reason" within the period commencing three months prior to and ending 12 months following a change in control, then she will be entitled to receive: (i) one year of continued base salary and (ii) full vesting acceleration of all then-outstanding equity awards. The foregoing severance benefits are subject to Dr. Jooss's execution and non-revocation of a general release of claims against the Company.

Dr. Rousseau. We entered into an offer letter with Dr. Rousseau on November 15, 2016 in connection with his appointment as Executive Vice President and Chief Medical Officer, which sets forth his initial base salary, annual bonus opportunity, benefit plans participation, and initial equity awards. The offer letter provides for an initial stock option grant covering 1,140,750 shares of our common stock, which was granted in May 2017.

Under Dr. Rousseau's offer letter, if he is terminated without "cause," resigns for "good reason" (as each is defined in the offer letter), or his employment ends due to death or permanent disability, he will be eligible to receive: (i) 12 months of continued base salary, (ii) a pro-rated annual bonus calculated at 100% of target, and (iii) up to 12 months of continued healthcare coverage reimbursements. In addition, if Dr. Rousseau is terminated without "cause" or resigns for "good reason" within the period commencing three months prior to the Company entering into a definitive agreement for a change in control and ending 12 months following a change in control, then he will be entitled to receive (i) one year of continued base salary, (ii) a pro-rated annual bonus plus a full annual bonus, each calculated at 100% of target, (iii) up to 12 months of continued healthcare coverage, and (iv) full vesting acceleration of all then-outstanding equity awards. The foregoing severance benefits are subject to Dr. Rousseau's execution and non-revocation of a general release of claims against the Company.

Equity Compensation Plans

The following summarizes the material terms of the long-term incentive compensation plan in which our named executive officers will be eligible to participate following the consummation of this offering and our 2015 Equity Incentive Plan, referred to as the 2015 Plan, under which we have previously made periodic grants of equity and equity-based awards to our named executive officers and other key employees.

2018 Incentive Award Plan

We intend to adopt the 2018 Incentive Award Plan, or 2018 Plan, which will be effective on the day prior to the first public trading date of our common stock. The principal purpose of the 2018 Plan is to attract, retain and motivate selected employees, consultants and directors through the granting of stock-based compensation awards and cash-based performance bonus awards. The material terms of the 2018 Plan, as it is currently contemplated, are summarized below.

Share Reserve. Under the 2018 Plan, _____ shares of our common stock will be initially reserved for issuance pursuant to a variety of stock-based compensation awards, including stock options, stock appreciation rights, or SARs, restricted stock awards, restricted stock unit awards and other stock-based awards, plus the number of shares remaining available for future awards under the 2015 Plan, as of the effective date of the 2018 Plan. The number of shares initially reserved for issuance or transfer pursuant to awards under the 2018 Plan will be increased by (i) the number of shares represented by awards outstanding under our 2015 Plan that are forfeited or lapse unexercised and which following the effective date are not issued under our 2015 Plan and (ii) an annual increase on the first day of each fiscal year beginning in 2019 and ending in 2028, equal to the lesser of (A) _____ % of the shares of stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (B) such smaller number of shares of stock as determined by our board of directors; provided, however, that no more than _____ shares of stock may be issued upon the exercise of incentive stock options.

The following counting provisions will be in effect for the share reserve under the 2018 Plan:

- to the extent that an award terminates, expires or lapses for any reason or an award is settled in cash without the delivery of shares, any shares subject to the award at such time will be available for future grants under the 2018 Plan;
- to the extent shares are tendered or withheld to satisfy the grant, exercise price or tax withholding obligation with respect to any award under the 2018 Plan, such tendered or withheld shares will be available for future grants under the 2018 Plan;
- to the extent shares subject to stock appreciation rights are not issued in connection with the stock settlement of stock appreciation rights on exercise thereof, such shares will be available for future grants under the 2018 Plan;
- to the extent that shares of our common stock are repurchased by us prior to vesting so that shares are returned to us, such shares will be available for future grants under the 2018 Plan;
- the payment of dividend equivalents in cash in conjunction with any outstanding awards will not be counted against the shares available for issuance under the 2018 Plan; and
- to the extent permitted by applicable law or any exchange rule, shares issued in assumption of, or in substitution for, any outstanding awards of any entity acquired in any form of combination by us or any of our subsidiaries will not be counted against the shares available for issuance under the 2018 Plan.

Administration. The compensation committee of our board of directors is expected to administer the 2018 Plan unless our board of directors assumes authority for administration. The compensation committee must consist of at least three members of our board of directors, each of whom is intended to qualify as a “non-employee director” for purposes of Rule 16b-3 under the Exchange Act and an “independent director” within the meaning of the rules of the applicable stock exchange, or other principal securities market on which shares of our common stock are traded. The 2018 Plan provides that the board or compensation committee may delegate its authority to grant awards to employees other than executive officers and certain senior executives of the company to a committee consisting of one or more members of our board of directors or one or more of our officers, other than awards made to our non-employee directors, which must be approved by our full board of directors.

Subject to the terms and conditions of the 2018 Plan, the administrator has the authority to select the persons to whom awards are to be made, to determine the number of shares to be subject to awards and the terms and conditions of awards, and to make all other determinations and to take all other actions necessary or advisable for the administration of the 2018 Plan. The administrator is also authorized to adopt, amend or rescind rules relating to administration of the 2018 Plan. Our board of directors may at any time remove the compensation committee as the administrator and reconstitute itself the authority to administer the 2018 Plan. The full board of directors will administer the 2018 Plan with respect to awards to non-employee directors.

Eligibility. Options, SARs, restricted stock and all other stock-based and cash-based awards under the 2018 Plan may be granted to individuals who are then our officers, employees or consultants or are the officers, employees or consultants of certain of our subsidiaries. Such awards also may be granted to our directors. Only employees of our company or certain of our subsidiaries may be granted incentive stock options, or ISOs.

Awards. The 2018 Plan provides that the administrator may grant or issue stock options, SARs, restricted stock, restricted stock units, other stock- or cash-based awards and dividend equivalents, or any combination thereof. Each award will be set forth in a separate agreement with the person receiving the award and will indicate the type, terms and conditions of the award.

- *Nonstatutory Stock Options*, or NSOs, will provide for the right to purchase shares of our common stock at a specified price which may not be less than fair market value on the date of grant, and usually will become exercisable (at the discretion of the administrator) in one or more installments after the grant date, subject to the participant’s continued employment or service with us and/or subject to the satisfaction of corporate performance targets and individual performance targets established by the administrator. NSOs may be granted for any term specified by the administrator that does not exceed ten years.
- *Incentive Stock Options*, or ISOs, will be designed in a manner intended to comply with the provisions of Section 422 of the Code and will be subject to specified restrictions contained in the Code. Among such restrictions, ISOs must have an exercise price of not less than the fair market value of a share of common stock on the date of grant, may only be granted to employees, and must not be exercisable after a period of ten years measured from the date of grant. In the case of an ISO granted to an individual who owns (or is deemed to own) at least 10% of the total combined voting power of all classes of our capital stock, the 2018 Plan provides that the exercise price must be at least 110% of the fair market value of a share of common stock on the date of grant and the ISO must not be exercisable after a period of five years measured from the date of grant.
- *Restricted Stock* may be granted to any eligible individual and made subject to such restrictions as may be determined by the administrator. Restricted stock, typically, may be forfeited for no consideration or repurchased by us at the original purchase price if the conditions or

restrictions on vesting are not met. In general, restricted stock may not be sold or otherwise transferred until restrictions are removed or expire. Purchasers of restricted stock, unlike recipients of options, will have voting rights and will have the right to receive dividends, if any, prior to the time when the restrictions lapse, however, extraordinary dividends will generally be placed in escrow, and will not be released until restrictions are removed or expire.

- *Restricted Stock Units* may be awarded to any eligible individual, typically without payment of consideration, but subject to vesting conditions based on continued employment or service or on performance criteria established by the administrator. Like restricted stock, restricted stock units may not be sold, or otherwise transferred or hypothecated, until vesting conditions are removed or expire. Unlike restricted stock, stock underlying restricted stock units will not be issued until the restricted stock units have vested, and recipients of restricted stock units generally will have no voting or dividend rights prior to the time when vesting conditions are satisfied.
- *Stock Appreciation Rights*, or SARs, may be granted in connection with stock options or other awards, or separately. SARs granted in connection with stock options or other awards typically will provide for payments to the holder based upon increases in the price of our common stock over a set exercise price. The exercise price of any SAR granted under the 2018 Plan must be at least 100% of the fair market value of a share of our common stock on the date of grant. SARs under the 2018 Plan will be settled in cash or shares of our common stock, or in a combination of both, at the election of the administrator.
- *Other Stock or Cash Based Awards* are awards of cash, fully vested shares of our common stock and other awards valued wholly or partially by referring to, or otherwise based on, shares of our common stock. Other stock or cash based awards may be granted to participants and may also be available as a payment form in the settlement of other awards, as standalone payments and as payment in lieu of base salary, bonus, fees or other cash compensation otherwise payable to any individual who is eligible to receive awards. The plan administrator will determine the terms and conditions of other stock or cash based awards, which may include vesting conditions based on continued service, performance and/or other conditions.
- *Dividend Equivalents* represent the right to receive the equivalent value of dividends paid on shares of our common stock and may be granted alone or in tandem with awards other than stock options or SARs. Dividend equivalents are credited as of dividend payments dates during the period between a specified date and the date such award terminates or expires, as determined by the plan administrator. In addition, dividend equivalents with respect to shares covered by a performance award will only be paid to the participant at the same time or times and to the same extent that the vesting conditions, if any, are subsequently satisfied and the performance award vests with respect to such shares.

Any award may be granted as a performance award, meaning that the award will be subject to vesting and/or payment based on the attainment of specified performance goals.

Change in Control. In the event of a change in control, unless the plan administrator elects to terminate an award in exchange for cash, rights or other property, or cause an award to accelerate in full prior to the change in control, such award will continue in effect or be assumed or substituted by the acquirer, provided that any performance-based portion of the award will be subject to the terms and conditions of the applicable award agreement. In the event the acquirer refuses to assume or replace awards granted, prior to the consummation of such transaction, awards issued under the 2018 Plan will be subject to accelerated vesting such that 100% of such awards will become vested and exercisable or payable, as applicable. The administrator may also make appropriate adjustments to awards under the 2018 Plan and is authorized to provide for the acceleration, cash-out, termination, assumption, substitution or conversion of such awards in the event of a change in control or certain other unusual or nonrecurring events or transactions.

Adjustments of Awards. In the event of any stock dividend or other distribution, stock split, reverse stock split, reorganization, combination or exchange of shares, merger, consolidation, split-up, spin-off, recapitalization, repurchase or any other corporate event affecting the number of outstanding shares of our common stock or the share price of our common stock that would require adjustments to the 2018 Plan or any awards under the 2018 Plan in order to prevent the dilution or enlargement of the potential benefits intended to be made available thereunder, the administrator will make appropriate, proportionate adjustments to: (i) the aggregate number and type of shares subject to the 2018 Plan; (ii) the number and kind of shares subject to outstanding awards and terms and conditions of outstanding awards (including, without limitation, any applicable performance targets or criteria with respect to such awards); and (iii) the grant or exercise price per share of any outstanding awards under the 2018 Plan.

Amendment and Termination. The administrator may terminate, amend or modify the 2018 Plan at any time and from time to time. However, we must generally obtain stockholder approval to the extent required by applicable law, rule or regulation (including any applicable stock exchange rule). Notwithstanding the foregoing, an option may be amended to reduce the per share exercise price below the per share exercise price of such option on the grant date and options may be granted in exchange for, or in connection with, the cancellation or surrender of options having a higher per share exercise price without receiving additional stockholder approval.

No incentive stock options may be granted pursuant to the 2018 Plan after the tenth anniversary of the effective date of the 2018 Plan, and no additional annual share increases to the 2018 Plan's aggregate share limit will occur from and after such anniversary. Any award that is outstanding on the termination date of the 2018 Plan will remain in force according to the terms of the 2018 Plan and the applicable award agreement.

2015 Equity Incentive Plan

Our board of directors adopted, and our stockholders approved, the 2015 Plan effective as of August 28, 2015, which was subsequently amended to increase the number of shares issuable under the 2015 Plan. As of July 31, 2018, under the 2015 Plan, there were outstanding options to purchase 11,507,414 shares of our common stock at a weighted-average exercise price per share of \$0.22 and 7,245,489 outstanding shares of common stock, and there were 5,580,429 shares of common stock reserved for issuance pursuant to future awards. Following this offering and in connection with the effectiveness of our 2018 Plan, the 2015 Plan will terminate and no further awards will be granted under the 2015 Plan. However, all outstanding awards will continue to be governed by their existing terms.

Administration. Our board of directors, the compensation committee or another committee thereof appointed by our board of directors, has the authority to administer the 2015 Plan and the awards granted under it. The administrator has the authority to select the service providers to whom awards will be granted under the 2015 Plan, the number of shares to be subject to those awards under the 2015 Plan, and the terms and conditions of the awards granted. In addition, the administrator has the authority to construe and interpret the 2015 Plan and to adopt rules for the administration, interpretation and application of the 2015 Plan that are consistent with the terms of the 2015 Plan.

Awards. The 2015 Plan provides that the administrator may grant or issue options, including ISOs and NSOs, and stock purchase rights to employees, consultants and directors; provided that only employees may be granted ISOs.

- *Stock Options.* The 2015 Plan provides for the grant of ISOs or NSOs. ISOs may be granted only to employees. NSOs may be granted to employees, directors or consultants. The exercise

price of ISOs granted to employees who at the time of grant own stock representing more than 10% of the voting power of all classes of our common stock may not be less than 110% of the fair market value per share of our common stock on the date of grant, and the exercise price of ISOs granted to any other employees may not be less than 100% of the fair market value per share of our common stock on the date of grant. The exercise price of NSOs to employees, directors or consultants may not be less than 100% of the fair market value per share of our common stock on the date of grant.

- *Stock Purchase Rights.* The 2015 Plan provides for the grant of stock purchase rights. Each stock purchase right that is accepted will be governed by a restricted stock purchase agreement, which will detail the restrictions on transferability, risk of forfeiture and other restrictions the administrator approves. In general, restricted stock acquired upon exercise of a stock purchase right may not be sold, transferred, pledged, hypothecated, margined or otherwise encumbered until restrictions are removed or expire. Holders of restricted stock, unlike recipients of stock options, will have voting rights and will have the right to receive dividends, if any, prior to the time when the restrictions lapse.

Adjustments of Awards. In the event of any dividend or other distribution, recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, exchange of shares or other change in the corporate structure of the Company affecting shares of common stock, the administrator will make adjustments to the number and class of shares available for issuance under the 2015 Plan and the number, class and price of shares subject to outstanding awards.

Change in Control. In the event of a merger or change in control, the administrator has discretion to determine the treatment of each outstanding award, and may provide that the awards will be assumed or substituted, that the awards will terminate or accelerate in full immediately prior to the change in control or that awards will terminate in exchange for cash or other property. In addition, in the event of a change in control where the acquirer does not assume or replace awards granted, prior to the consummation of such transaction, awards issued under the 2015 Plan will accelerate in full.

Amendment and Termination. Our board of directors may amend or terminate the 2015 Plan or any portion thereof at any time. However, no amendment may impair the rights of a holder of an outstanding award without the holder's consent, and any action by our board of directors to increase the number of shares subject to the plan or extend the term of the plan is subject to the approval of our stockholders. Additionally, an amendment of the plan shall be subject to the approval of our stockholders, where such approval by our stockholders of an amendment is required by applicable law. Following this offering and in connection with the effectiveness of our 2018 Plan, the 2015 Plan will terminate and no further awards will be granted under the 2015 Plan.

2018 Employee Stock Purchase Plan

We intend to adopt and ask our stockholders to approve the 2018 Employee Stock Purchase Plan, which we refer to as our ESPP, which will be effective on the day prior to the first public trading date of our common stock. The ESPP is designed to allow our eligible employees to purchase shares of our common stock, at semi-annual intervals, with their accumulated payroll deductions. The ESPP is intended to qualify under Section 423 of the Code. The material terms of the ESPP, as it is currently contemplated, are summarized below.

Administration. Subject to the terms and conditions of the ESPP, our compensation committee will administer the ESPP. Our compensation committee can delegate administrative tasks under the ESPP to the services of an agent and/or employees to assist in the administration of the ESPP. The

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administrator will have the discretionary authority to administer and interpret the ESPP. Interpretations and constructions of the administrator of any provision of the ESPP or of any rights thereunder will be conclusive and binding on all persons. We will bear all expenses and liabilities incurred by the ESPP administrator.

Share Reserve. The maximum number of our shares of our common stock which will be authorized for sale under the ESPP is equal to the sum of (a) _____ shares of common stock and (b) an annual increase on the first day of each year beginning in 2019 and ending in 2028, equal to the lesser of (i) 1% of the shares of common stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (ii) such number of shares of common stock as determined by our board of directors; provided, however, no more than _____ shares of our common stock may be issued under the ESPP. The shares reserved for issuance under the ESPP may be authorized but unissued shares or reacquired shares.

Eligibility. Employees eligible to participate in the ESPP for a given offering period generally include employees who are employed by us or one of our subsidiaries on the first day of the offering period, or the enrollment date. Our employees (and, if applicable, any employees of our subsidiaries) who customarily work less than five months in a calendar year or are customarily scheduled to work less than 20 hours per week will not be eligible to participate in the ESPP. Finally, an employee who owns (or is deemed to own through attribution) 5% or more of the combined voting power or value of all our classes of stock or of one of our subsidiaries will not be allowed to participate in the ESPP.

Participation. Employees will enroll under the ESPP by completing a payroll deduction form permitting the deduction from their compensation of at least 1% of their compensation but not more than the lesser of 15% of their compensation or \$50,000. Such payroll deductions may be expressed as either a whole number percentage or a fixed dollar amount, and the accumulated deductions will be applied to the purchase of shares on each purchase date. However, a participant may not purchase more than 15,000 shares in each offering period and may not subscribe for more than \$25,000 in fair market value of shares of our common stock (determined at the time the option is granted) during any calendar year. The ESPP administrator has the authority to change these limitations for any subsequent offering period.

Offering. Under the ESPP, participants are offered the option to purchase shares of our common stock at a discount during a series of successive offering periods, the duration and timing of which will be determined by the ESPP administrator. However, in no event may an offering period be longer than 27 months in length.

The option purchase price will be the lower of 85% of the closing trading price per share of our common stock on the first trading date of an offering period in which a participant is enrolled or 85% of the closing trading price per share on the purchase date, which will occur on the last trading day of each offering period.

Unless a participant has previously canceled his or her participation in the ESPP before the purchase date, the participant will be deemed to have exercised his or her option in full as of each purchase date. Upon exercise, the participant will purchase the number of whole shares that his or her accumulated payroll deductions will buy at the option purchase price, subject to the participation limitations listed above.

A participant may cancel his or her payroll deduction authorization at any time prior to the end of the offering period. Upon cancellation, the participant will have the option to either (i) receive a refund of the participant's account balance in cash without interest or (ii) exercise the participant's option for the current offering period for the maximum number of shares of common stock on the applicable

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purchase date, with the remaining account balance refunded in cash without interest. Following at least one payroll deduction, a participant may also decrease (but not increase) his or her payroll deduction authorization once during any offering period. If a participant wants to increase or decrease the rate of payroll withholding, he or she may do so effective for the next offering period by submitting a new form before the offering period for which such change is to be effective.

A participant may not assign, transfer, pledge or otherwise dispose of (other than by will or the laws of descent and distribution) payroll deductions credited to a participant's account or any rights to exercise an option or to receive shares of our common stock under the ESPP, and during a participant's lifetime, options in the ESPP shall be exercisable only by such participant. Any such attempt at assignment, transfer, pledge or other disposition will not be given effect.

Adjustments upon Changes in Recapitalization, Dissolution, Liquidation, Merger or Asset Sale. In the event of any increase or decrease in the number of issued shares of our common stock resulting from a stock split, reverse stock split, stock dividend, combination or reclassification of the common stock, or any other increase or decrease in the number of shares of common stock effected without receipt of consideration by us, we will proportionately adjust the aggregate number of shares of our common stock offered under the ESPP, the number and price of shares which any participant has elected to purchase under the ESPP and the maximum number of shares which a participant may elect to purchase in any single offering period. If there is a proposal to dissolve or liquidate us, then the ESPP will terminate immediately prior to the consummation of such proposed dissolution or liquidation, and any offering period then in progress will be shortened by setting a new purchase date to take place before the date of our dissolution or liquidation. We will notify each participant of such change in writing at least 10 business days prior to the new exercise date. If we undergo a merger with or into another corporation or sell all or substantially all of our assets, each outstanding option will be assumed or an equivalent option substituted by the successor corporation or the parent or subsidiary of the successor corporation. If the successor corporation refuses to assume the outstanding options or substitute equivalent options, then any offering period then in progress will be shortened by setting a new purchase date to take place before the date of our proposed sale or merger. We will notify each participant of such change in writing at least 10 business days prior to the new exercise date.

Amendment and Termination. Our board of directors may amend, suspend or terminate the ESPP at any time. However, the board of directors may not amend the ESPP without obtaining stockholder approval within 12 months before or after such amendment to the extent required by applicable laws.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

In addition to the compensation arrangements, including employment, termination of employment and change in control arrangements, with our directors and executive officers, including those discussed in the sections titled “Management” and “Executive Compensation,” the following is a description of each transaction since our inception on August 5, 2015 and each currently proposed transaction in which:

- we have been or are to be a participant;
- the amounts involved exceeded or will exceed \$120,000; and
- any of our directors, executive officers or holders of more than 5% of our capital stock, or an affiliate or immediate family member thereof, had or will have a direct or indirect material interest.

Sales and Purchases of Securities**Series A Convertible Preferred Stock Financing**

In September 2015 and April 2016, we issued an aggregate of 61,260,000 shares of our Series A convertible preferred stock at a price per share of \$1.00 for aggregate proceeds to us of \$61.3 million. The table below sets forth the number of shares of Series A convertible preferred stock sold to our directors, executive officers or owners of more than 5% of our capital stock, or an affiliate or immediate family member thereof:

| Name | Number of Shares of Series A Convertible Preferred Stock | Purchase Price (\$) |
|---|---|----------------------------|
| Entities affiliated with Versant Ventures(1) | 15,000,000 | \$ 15,000,000 |
| The Column Group II, LP(2) | 15,000,000 | \$ 15,000,000 |
| Clarus Lifesciences III, L.P.(3) | 10,800,000 | \$ 10,800,000 |
| Entities affiliated with Frazier Healthcare Partners(4) | 9,000,000 | \$ 9,000,000 |
| Entities affiliated with Redmile Group(4) | 6,000,000 | \$ 6,000,000 |
| Patrick Mahaffy(5) | 120,000 | \$ 120,000 |
| Roger Allen(6) | 90,000 | \$ 90,000 |
| Darshan Moroak(6) | 27,000 | \$ 27,000 |
| Parminder Moroak(6) | 30,000 | \$ 30,000 |
| Opinder Moroak(6) | 12,000 | \$ 12,000 |
| Vladimir and Irina Yelensky(7) | 30,000 | \$ 30,000 |

- (1) Entities affiliated with Versant Ventures became beneficial owners of (in the aggregate) more than 5% of our capital stock upon the initial closing of the transaction. Thomas Woiwode, Ph.D., who is a member of our board of directors, is an affiliate of Versant Ventures.
- (2) The Column Group II, LP became the beneficial owner of more than 5% of our capital stock upon the initial closing of the transaction. Peter Svenilson, who is a member of our board of directors, is an affiliate of The Column Group II, LP.
- (3) Clarus Lifesciences III, L.P. became the beneficial owner of more than 5% of our capital stock upon the initial closing of the transaction. Nicholas Simon, who is a member of our board of directors, is an affiliate of Clarus Lifesciences III, L.P.
- (4) The purchasers became beneficial owners of (in the aggregate) more than 5% of our capital stock upon the initial closing of the transaction.
- (5) Mr. Mahaffy became a member of our board of directors upon the initial closing of the transaction. In May 2018, Mr. Mahaffy resigned as a member of our board of directors.

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- (6) The purchaser is an immediate family member of Andrew Allen, M.D., Ph.D., who is currently and was at the time of the transaction one of our executive officers and a member of our board of directors.
- (7) The purchaser is an immediate family member of Roman Yelensky, Ph.D., who is currently and was at the time of the transaction one of our executive officers.

Series B Convertible Preferred Stock Financing

In September and October 2017, we issued an aggregate of 61,543,319 shares of our Series B convertible preferred stock at a price per share of \$1.56 for aggregate proceeds to us of \$96.0 million. The table below sets forth the number of shares of Series B convertible preferred stock sold to our directors, executive officers or owners of more than 5% of our capital stock, or an affiliate or immediate family member thereof:

| Name | Number of Shares of Series B Convertible Preferred Stock | Purchase Price (\$) |
|---|---|----------------------------|
| Entities affiliated with Versant Ventures(1) | 6,410,256 | \$ 10,000,000 |
| The Column Group II, LP(2) | 6,410,256 | \$ 10,000,000 |
| Clarus Lifesciences III, L.P.(3) | 4,615,384 | \$ 7,200,000 |
| Entities affiliated with Frazier Healthcare Partners(4) | 3,846,153 | \$ 6,000,000 |
| Entities affiliated with Lilly Asia Ventures(5) | 9,615,383 | \$ 15,000,000 |
| Entities affiliated with Redmile Group(4) | 2,564,102 | \$ 4,000,000 |
| Trinitas Capital G, L.P.(6) | 12,820,512 | \$ 20,000,000 |
| Patrick Mahaffy(7) | 128,205 | \$ 200,000 |
| Roger Allen(8) | 60,000 | \$ 93,600 |
| Darshan Moroak(8) | 11,538 | \$ 18,000 |
| Parminder Moroak(8) | 12,820 | \$ 20,000 |
| Opinder Moroak(8) | 5,128 | \$ 8,000 |
| Vladimir and Irina Yelensky(9) | 12,820 | \$ 20,000 |

- (1) Entities affiliated with Versant Ventures beneficially owned (in the aggregate) more than 5% of our capital stock immediately prior to and following the initial closing of the transaction. Dr. Woiwode, who is a member of our board of directors, is an affiliate of Versant Ventures.
- (2) The Column Group II, LP beneficially owned more than 5% of our capital stock immediately prior to and following the initial closing of the transaction. Mr. Svenilsson, who is a member of our board of directors, is an affiliate of The Column Group II, LP.
- (3) Clarus Lifesciences III, L.P. beneficially owned more than 5% of our capital stock immediately prior to and following the initial closing of the transaction. Mr. Simon, who is a member of our board of directors, is an affiliate of Clarus Lifesciences III, L.P.
- (4) The purchasers beneficially owned (in the aggregate) more than 5% of our capital stock immediately prior to and following the initial closing of the transaction.
- (5) Entities affiliated with Lilly Asia Ventures became beneficial owners of (in the aggregate) more than 5% of our capital stock upon the initial closing of the transaction. Judith Li, who is a member of our board of directors, is an affiliate of Lilly Asia Ventures.
- (6) The purchaser became the beneficial owner of more than 5% of our capital stock upon the initial closing of the transaction.
- (7) Mr. Mahaffy was at the time of the transaction a member of our board of directors. In May 2018, Mr. Mahaffy resigned as a member of our board of directors.
- (8) The purchaser is an immediate family member of Dr. Allen, who is currently and was at the time of the transaction one of our executive officers and a member of our board of directors.
- (9) The purchaser is an immediate family member of Dr. Yelensky, who is currently and was at the time of the transaction one of our executive officers.

Series C Convertible Preferred Stock Financing

In June and July 2018, we issued an aggregate of 5,820,105 shares of our Series C convertible preferred stock at a price per share of \$1.89 for aggregate proceeds to us of \$11.0 million. Of these shares, we sold 1,058,201 shares of Series C convertible preferred stock to entities affiliated with Redmile Group, which beneficially owned more than 5% of our capital stock immediately prior to and following the transaction.

Director and Executive Officer Compensation

Please see “Management—Director Compensation” and “Executive Compensation” for information regarding the compensation of our directors and executive officers.

Employment Agreements

We have entered into employment agreements with our executive officers. For more information regarding these agreements, see “Executive Compensation—Narrative to Summary Compensation Table and Outstanding Equity Awards at Fiscal Year End.”

Indemnification Agreements and Directors’ and Officers’ Liability Insurance

We have entered into or intend to enter into indemnification agreements with each of our directors and executive officers. These agreements will require us to, among other things, indemnify each director and executive officer to the fullest extent permitted by Delaware law, including indemnification of expenses such as attorneys’ fees, judgments, penalties fines and settlement amounts incurred by the director or executive officer in any action or proceeding, including any action or proceeding by or in right of us, arising out of the person’s services as a director or executive officer. We have obtained an insurance policy that insures our directors and officers against certain liabilities, including liabilities arising under applicable securities laws. For additional information see “Management—Limitation of Liability and Indemnification Matters.”

Investors’ Rights Agreements

We entered into an amended and restated investor rights agreement with the purchasers of our outstanding convertible preferred stock, including entities with which certain of our directors are affiliated. As of July 31, 2018, the holders of approximately 128.6 million shares of our common stock, including the shares of common stock issuable upon the conversion of our Series A, Series B and Series C convertible preferred stock, are entitled to rights with respect to the registration of their shares under the Securities Act. For a more detailed description of these registration rights, see “Description of Capital Stock—Registration Rights.” The investor rights agreement also provides for a right of first refusal in favor of certain holders of convertible preferred stock with regard to certain issuances of our capital stock. The rights of first refusal will not apply to, and will terminate upon the consummation of, this offering.

Voting Agreement

We entered into an amended and restated voting agreement with certain holders of our common stock and convertible preferred stock. Upon the consummation of this offering, the amended and restated voting agreement will terminate. For a description of the amended and restated voting agreement, see “Management—Board Composition—Voting Arrangements.”

Right of First Refusal and Co-Sale Agreement

We entered into an amended and restated right of first refusal and co-sale agreement with certain holders of our common stock and convertible preferred stock. This agreement provides for rights of first refusal and co-sale relating to the shares of our common stock held by the parties to the agreement. Upon the consummation of this offering, the amended and restated right of first refusal and co-sale agreement will terminate.

Policies and Procedures for Related Party Transactions

Prior to the consummation of this offering, our board of directors will adopt a written related person transaction policy, to be effective upon the consummation of this offering, setting forth the policies and procedures for the review and approval or ratification of related person transactions. This policy will cover, with certain exceptions set forth in Item 404 of Regulation S-K under the Securities Act, any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships in which we were or are to be a participant, where the amount involved exceeds \$120,000 and a related person had or will have a direct or indirect material interest, including without limitation purchases of goods or services by or from the related person or entities in which the related person has a material interest, indebtedness, guarantees of indebtedness and employment by us of a related person. In reviewing and approving any such transactions, our audit committee is tasked to consider all relevant facts and circumstances, including but not limited to whether the transaction is on terms comparable to those that could be obtained in an arm's length transaction with an unrelated third party and the extent of the related person's interest in the transaction. All of the transactions described in this section occurred prior to the adoption of this policy.

PRINCIPAL STOCKHOLDERS

The following table sets forth information relating to the beneficial ownership of our common stock as of July 31, 2018, by:

- each person, or group of affiliated persons, known by us to beneficially own more than 5% of our outstanding shares of common stock;
- each of our directors;
- each of our named executive officers; and
- all directors and executive officers as a group.

The number of shares beneficially owned by each entity, person, director or executive officer is determined in accordance with the rules of the SEC, and the information is not necessarily indicative of beneficial ownership for any other purpose. Under such rules, beneficial ownership includes any shares over which the individual has sole or shared voting power or investment power as well as any shares that the individual has the right to acquire within 60 days after July 31, 2018 through the exercise of any stock option, warrants or other rights. Except as otherwise indicated, and subject to applicable community property laws, the persons named in the table have sole voting and investment power with respect to all shares of common stock held by that person.

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The percentage of shares beneficially owned is computed on the basis of 147,565,581 shares of our common stock outstanding as of July 31, 2018, which reflects the assumed conversion of all of our outstanding shares of Series A, Series B and Series C convertible preferred stock into an aggregate of 128,623,424 shares of common stock. Shares of our common stock that a person has the right to acquire within 60 days after July 31, 2018 are deemed outstanding for purposes of computing the percentage ownership of the person holding such rights, but are not deemed outstanding for purposes of computing the percentage ownership of any other person, except with respect to the percentage ownership of all directors and executive officers as a group. Unless otherwise indicated below, the address for each beneficial owner listed is c/o Gritstone Oncology, Inc., 5858 Horton Street, Suite 210, Emeryville, California 94608.

| Name of Beneficial Owner | Beneficial Ownership Prior to this Offering | | | | Beneficial Ownership After this Offering | |
|--|---|---|-------------------------------------|------------------------------------|--|------------------------------------|
| | Number of Outstanding Shares Beneficially Owned | Number of Shares Exercisable Within 60 Days | Number of Shares Beneficially Owned | Percentage of Beneficial Ownership | Number of Shares Beneficially Owned | Percentage of Beneficial Ownership |
| 5% and Greater Stockholders: | | | | | | |
| Entities affiliated with Versant Ventures(1) | 21,410,256 | — | 21,410,256 | 14.5% | | % |
| The Column Group II, LP(2) | 21,410,256 | — | 21,410,256 | 14.5% | | % |
| Clarus Lifesciences III, L.P.(3) | 15,415,384 | — | 15,415,384 | 10.4% | | % |
| Entities affiliated with Frazier Healthcare(4) | 12,846,153 | — | 12,846,153 | 8.7% | | % |
| Trinitas Capital G, L.P.(5) | 12,820,512 | — | 12,820,512 | 8.7% | | % |
| Entities affiliated with Lilly Asia Ventures(6) | 9,615,383 | — | 9,615,383 | 6.5% | | % |
| Entities affiliated with Redmile Group(7) | 9,622,303 | — | 9,622,303 | 6.5% | | % |
| Named Executive Officers and Directors: | | | | | | |
| Andrew Allen, M.D., Ph.D.(8) | 10,000,000 | — | 10,000,000 | 6.8% | | % |
| Karin Jooss, Ph.D.(9) | 2,221,000 | — | 2,221,000 | 1.5% | | % |
| Raphaël Rousseau, M.D., Ph.D. | — | 404,015 | 404,015 | * | | % |
| Richard Heyman, Ph.D.(10) | 367,940 | — | 367,940 | * | | % |
| Steve Krognies | — | — | — | * | | % |
| Judith Li | — | — | — | * | | % |
| Nicholas Simon(11) | 15,415,384 | — | 15,415,384 | 10.4% | | % |
| Peter Svenilson(12) | 21,410,256 | — | 21,410,256 | 14.5% | | % |
| Thomas Woiwode, Ph.D.(13) | 21,410,256 | — | 21,410,256 | 14.5% | | % |
| All directors and executive officers as a group (14 persons)(14) | 72,801,336 | 806,098 | 73,607,434 | 49.6% | | % |

* Indicates beneficial ownership of less than 1% of the total outstanding common stock.

- (1) Consists of (i) 13,163,333 shares of common stock issuable upon conversion of Series A convertible preferred stock and 5,625,587 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Versant Venture Capital V, L.P. ("VVC V"), (ii) 1,001,794 shares of common stock issuable upon conversion of Series A convertible preferred stock and 428,135 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Versant Venture Capital V (Canada) LP ("VVC CAN"), (iii) 438,914 shares of common stock issuable upon conversion of Series A convertible preferred stock and 187,314 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Versant Ophthalmic Affiliates Fund I, L.P. ("VOA"), and (iv) 395,959 shares of common stock issuable upon conversion of Series A convertible preferred stock and 169,220 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Versant Affiliates Fund V, L.P. ("VAF V"). Versant Ventures V, LLC, or VV V, serves as the sole general partner of

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- VOA, VAF V and VVC V and owns no shares directly. Versant Ventures V (Canada) GP-GP, Inc. ("VV V CAN GP"), serves as the sole general partner of Versant Ventures V (Canada), L.P. ("VV V CAN"), which serves as the sole general partner of VVC CAN and owns no shares directly. Samuel D. Colella, William J. Link, Bradley Bolzon, Ph.D., Robin L. Praeger, Kirk G. Nielson and Thomas Woiwode, Ph.D. are managing directors of VV V and directors of VV V CAN GP and share voting and dispositive power over the shares held by VOA, VAF V, VVC V and VVC CAN; however, they each disclaim beneficial ownership of the shares held by VOA, VAF V, VVC V and VVC CAN, except to the extent of their pecuniary interests therein. The address for each of the Versant Ventures entities is One Sansome Street, Suite 3630, San Francisco, CA 94104.
- (2) Consists of 15,000,000 shares of common stock issuable upon conversion of Series A convertible preferred stock and 6,410,256 shares of common stock issuable upon conversion of Series B convertible preferred stock. The Column Group II GP, LP is the general partner of The Column Group II, LP. The managing partners of The Column Group II GP, LP are David Goeddel and Peter Svennilson. The managing partners of The Column Group II GP, LP may be deemed to have voting and investment power with respect to such shares. Messrs. Goeddel and Svennilson disclaim beneficial ownership of all shares above except to the extent of their pecuniary interest therein. The address of the above persons and entities is 1700 Owens Street, Suite 500, San Francisco, California 94158.
- (3) Consists of 10,800,000 shares of common stock issuable upon conversion of Series A convertible preferred stock and 4,615,384 shares of common stock issuable upon conversion of Series B convertible preferred stock. Clarus Ventures III GP, L.P. ("GPLP"), as the sole general partner of Clarus Lifesciences III, L.P. ("Clarus"), may be deemed to beneficially own certain of the shares held by Clarus. The GPLP disclaims beneficial ownership of all shares held by Clarus in which the GPLP does not have an actual pecuniary interest. Clarus Ventures III, LLC ("GPLLC"), as the sole general partner of the GPLP, may be deemed to beneficially own certain of the shares held by Clarus. The GPLLC disclaims beneficial ownership of all shares held by Clarus in which it does not have an actual pecuniary interest. Each of Nicholas Galakatos, Dennis Henner, Robert Liptak, Nicholas Simon, Scott Requadt and Kurt Wheeler, as individual managing directors of the GPLLC, may be deemed to beneficially own certain of the shares held of record by Clarus. Each of Messrs. Galakatos, Henner, Liptak, Simon, Requadt and Wheeler disclaims beneficial ownership of all shares held of record by Clarus in which he does not have an actual pecuniary interest. The address of the above persons and entities is 101 Main Street, Suite 1210, Cambridge, Massachusetts 02142.
- (4) Consists of (i) 7,004,047 shares of common stock issuable upon conversion of Series A convertible preferred stock and 2,993,182 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Frazier Healthcare VII, L.P. and (ii) 1,995,953 shares of common stock issuable upon conversion of Series A convertible preferred stock and 852,971 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Frazier Healthcare VII-A, L.P. The general partner of Frazier Healthcare VII, L.P. and Frazier Healthcare VII-A, L.P. is FHM VII, L.P., a Delaware limited partnership. The general partner of FHM VII, L.P. is FHM VII, LLC, a Delaware limited liability company. James Topper, Alan Frazier, Nader Naini, Nathan Every and Patrick Heron are members of FHM VII, LLC and may be deemed to share voting and investment power with respect to the shares held by FHM VII, LLC. The address of the above persons and entities is 601 Union, Two Union Square, Suite 3200, Seattle, Washington 98101.
- (5) Consists of 12,820,512 shares of common stock issuable upon conversion of Series B convertible preferred stock. Trinitas Capital, Inc. is the general partner of Trinitas Capital G, L.P., and Cheng Zhou and Bing Han share management power of Trinitas Capital, Inc. and investment and voting power with respect to the shares held by Trinitas Capital G, L.P. The address of the above persons and entities is 401, 4/F Building 2, No. 39, Dongzhimenwai Street, Dongcheng District, Beijing, China.
- (6) Consists of (i) 6,410,256 shares of common stock issuable upon conversion of Series B convertible preferred stock held by LAV Zenith Limited, (ii) 2,136,751 shares of common stock issuable upon conversion of Series B convertible preferred stock held by LAV Auspicum Limited and (iii) 1,068,376 shares of common stock issuable upon conversion of Series B convertible preferred stock held by LAV Aria Limited. LAV Zenith Limited, LAV Auspicum Limited and LAV Aria Limited are owned by LAV Biosciences Fund IV, L.P., LAV Biosciences Fund III, L.P., and Lilly Asia Ventures Fund III, L.P., respectively. LAV GP IV, L.P. is the General Partner of LAV Biosciences Fund IV, L.P. LAV GP III, L.P. is the General Partner of LAV Biosciences Fund III, L.P., and Lilly Asia Ventures Fund III, L.P. The Managing Partner of LAV GP III, L.P. and LAV GP IV, L.P. is Yi Shi. Dr. Shi may be deemed to have voting and investment power with respect to the shares of our capital stock held by LAV Zenith Limited, LAV Auspicum Limited and LAV Aria Limited.

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- Dr. Shi disclaims beneficial ownership of all such shares except to the extent of his pecuniary interest therein. The address of the above person and entities is Unit 1109-10, Two Chinachem Central, 26 Des Voeux Road Central, Hong Kong.
- (7) Consists of (i) 3,000,000 shares of common stock issuable upon conversion of Series A convertible preferred stock, 1,234,626 shares of common stock issuable upon conversion of Series B convertible preferred stock and 351,302 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Redmile Capital Offshore Fund II, Ltd., (ii) 1,430,000 shares of common stock issuable upon conversion of Series A convertible preferred stock, 751,971 shares of common stock issuable upon conversion of Series B convertible preferred stock and 251,303 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Redmile Biopharma Investments I, L.P., (iii) 862,428 shares of common stock issuable upon conversion of Series A convertible preferred stock, 134,969 shares of common stock issuable upon conversion of Series B convertible preferred stock and 43,881 shares of Series C convertible preferred stock held by Redmile Strategic Master Fund, LP, (iv) 466,024 shares of common stock issuable upon conversion of Series A convertible preferred stock, 358,317 shares of common stock issuable upon conversion of Series B convertible preferred stock and 357,328 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Redmile Capital Fund, LP, and (v) 241,548 shares of common stock issuable upon conversion of Series A convertible preferred stock, 84,219 shares of common stock issuable upon conversion of Series B convertible preferred stock and 54,87 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Redmile Capital Offshore Fund, Ltd. Redmile Group, LLC is the investment manager to each of Redmile Capital Offshore Fund II, Ltd., Redmile Biopharma Investments I, L.P., Redmile Strategic Master Fund, LP, Redmile Capital Fund, LP and Redmile Capital Offshore Fund, Ltd. (collectively, the "Redmile Funds") and, in such capacity, exercises shared voting and dispositive power over the securities held by the Redmile Funds and may be deemed to beneficially own such securities. Jeremy Green serves as the managing member of Redmile Group, LLC and as such shares voting and dispositive power over the securities held by the Redmile Funds. Redmile Group, LLC and Mr. Green each disclaim beneficial ownership of these securities, except to the extent of its or his pecuniary interest in such securities, if any. The address of the above person and entities is One Letterman Drive, Building D, Suite D3-300, San Francisco, California 94129.
- (8) Consists of 10,000,000 shares of common stock, 7,708,333 of which shares will be vested within 60 days of July 31, 2018, and 2,291,667 of which shares will continue to be subject to our repurchase right.
- (9) Consists of 2,221,000 shares of common stock, 1,341,854 of which shares will be vested within 60 days of July 31, 2018, and 879,146 of which shares will continue to be subject to our repurchase right.
- (10) Consists of 367,940 shares of common stock, 255,109 of which shares will be vested within 60 days of July 31, 2018, and 112,831 of which shares will continue to be subject to our repurchase right.
- (11) Consists of the shares described in footnote 3 above. Mr. Simon disclaims beneficial ownership of all such shares except to the extent of his pecuniary interests therein.
- (12) Consists of the shares described in footnote 2 above. Mr. Svennilson disclaims beneficial ownership of all such shares except to the extent of his pecuniary interests therein.
- (13) Consists of the shares described in footnote 1 above. Dr. Woiwode disclaims beneficial ownership of all such shares except to the extent of his pecuniary interests therein.
- (14) Consists of (i) 14,565,440 shares of common stock, 10,746,493 of which shares will be vested within 60 days of July 31, 2018 and 3,818,947 of which shares will continue to be subject to our repurchase right, (ii) 806,098 shares of common stock that may be acquired pursuant to the exercise of stock options within 60 days of July 31, 2018, (iii) 40,800,000 shares of common stock issuable upon conversion of Series A convertible preferred stock and (iv) 17,435,896 shares of common stock issuable upon conversion of Series B convertible preferred stock.

DESCRIPTION OF CAPITAL STOCK

The following summary describes our capital stock and the material provisions of our amended and restated certificate of incorporation and our amended and restated bylaws, which will become effective immediately prior to the consummation of this offering, the investor rights agreement to which we and certain of our stockholders are parties and of the Delaware General Corporation Law. Because the following is only a summary, it does not contain all of the information that may be important to you. For a complete description, you should refer to our amended and restated certificate of incorporation, amended and restated bylaws and amended and restated investor rights agreement, copies of which have been filed as exhibits to the registration statement of which this prospectus is part.

General

Immediately prior to the consummation of this offering, we will file our amended and restated certificate of incorporation that authorizes 300,000,000 shares of common stock, \$0.0001 par value per share, and 10,000,000 shares of convertible preferred stock, \$0.0001 par value per share. As of June 30, 2018, after giving effect to the issuance of 1,058,021 shares of Series C convertible preferred stock in July 2018, there were outstanding:

- 147,565,581 shares of our common stock, on an as-converted basis, held by approximately 81 stockholders of record; and
- 11,507,414 shares of our common stock issuable upon exercise of outstanding stock options.

In connection with this offering, we expect to consummate a reverse stock split of our outstanding capital stock at a ratio to be determined.

Common Stock

Voting Rights

Each holder of our common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our stockholders do not have cumulative voting rights in the election of directors. Accordingly, holders of a majority of the voting shares are able to elect all of the directors. In addition, the affirmative vote of holders of 66-2/3% of the voting power of all of the then outstanding voting stock will be required to take certain actions, including amending certain provisions of our amended and restated certificate of incorporation, such as the provisions relating to amending our amended and restated bylaws, the classified board and director liability.

Dividends

Subject to preferences that may be applicable to any then outstanding convertible preferred stock, holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of convertible preferred stock.

Rights and Preferences

Holders of our common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our convertible preferred stock that we may designate in the future.

Fully Paid and Nonassessable

All of our outstanding shares of common stock are, and the shares of common stock to be issued in this offering will be, fully paid and nonassessable.

Convertible Preferred Stock

Immediately prior to the consummation of this offering, all outstanding shares of our convertible preferred stock will be converted into shares of our common stock. See Note 9 to our financial statements included elsewhere in this prospectus for a description of our currently outstanding convertible preferred stock. Immediately prior to the consummation of this offering, our amended and restated certificate of incorporation will be amended and restated to delete all references to such shares of convertible preferred stock. From and after 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 convertible 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 convertible 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 convertible 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 convertible preferred stock will be outstanding, and we have no present plan to issue any shares of convertible preferred stock.

Options

As of July 31, 2018, we had outstanding options to purchase 11,507,414 shares of our common stock, with a per share weighted-average exercise price of \$0.22, under our 2015 Equity Incentive Plan.

Registration Rights

Under our amended and restated investors' rights agreement, based on the number of shares outstanding as of July 31, 2018, following the consummation of this offering, the holders of approximately 128.6 million shares of common stock, or their transferees, have the right to require us to register their shares under the Securities Act so that those shares may be publicly resold, and the holders of approximately 128.6 million shares of common stock, or their transferees, have the right to include their shares in any registration statement we file, in each case as described below.

Demand Registration Rights

Based on the number of shares outstanding as of July 31, 2018, after the consummation of this offering, the holders of approximately 128.6 million shares of our common stock (on an as-converted

basis), or their transferees, will be entitled to certain demand registration rights. Beginning 180 days following the effectiveness of the registration statement of which this prospectus is a part, the holders of at least 30% of these shares (or a lesser percent if the anticipated aggregate offering price to the public net of certain expenses would exceed \$10 million) can request that we register all or a portion of their shares. Additionally, we will not be required to effect a demand registration during the period beginning 120 days prior to the filing and ending 180 days following the effectiveness of a company-initiated registration statement relating to a public offering of our securities.

Piggyback Registration Rights

Based on the number of shares outstanding as of July 31, 2018, after the consummation of this offering, in the event that we determine to register any of our securities under the Securities Act (subject to certain exceptions), either for our own account or for the account of other security holders, the holders of approximately 128.6 million shares of our common stock (on an as-converted basis), or their transferees, will be entitled to certain “piggyback” registration rights allowing the holders to include their shares in such registration, subject to certain marketing and other limitations. As a result, whenever we propose to file a registration statement under the Securities Act, other than with respect to a registration related to employee benefit plans, the offer and sale of debt securities, or corporate reorganizations or certain other transactions, the holders of these shares are entitled to notice of the registration and have the right, subject to limitations that the underwriters may impose on the number of shares included in the registration, to include their shares in the registration. In an underwritten offering, the managing underwriter, if any, has the right, subject to specified conditions, to limit the number of shares such holders may include.

Form S-3 Registration Rights

Based on the number of shares outstanding as of July 31, 2018, after the consummation of this offering, the holders of approximately 128.6 million shares of our common stock (on an as-converted basis), or their transferees, will be entitled to certain Form S-3 registration rights. The holders of any of at least 30% of these shares can make a written request that we register their shares on Form S-3 if we are eligible to file a registration statement on Form S-3 and if the aggregate price to the public of the shares offered is at least \$10 million net of certain expenses related to the sale of the shares. These stockholders may make an unlimited number of requests for registration on Form S-3, but in no event shall we be required to file more than two registrations on Form S-3 in any given 12 month period. Additionally, we will not be required to effect a Form S-3 registration during the period beginning 30 days prior to the filing and ending 90 days following the effectiveness of a company-initiated registration statement relating to a public offering of our securities.

Expenses of Registration

We will pay the registration expenses of the holders of the shares registered pursuant to the demand, piggyback and Form S-3 registration rights described above, including the expenses of one counsel for the selling holders.

Expiration of Registration Rights

The demand, piggyback and Form S-3 registration rights described above will expire, with respect to any particular stockholder, upon the earlier of three years after the consummation of this offering or when that stockholder can sell all of its shares under Rule 144 of the Securities Act during any three-month period.

Anti-Takeover Effects of Provisions of our Amended and Restated Certificate of Incorporation, our Amended and Restated Bylaws and Delaware Law

Some provisions of Delaware law and our amended and restated certificate of incorporation and our amended and restated bylaws that will become effective immediately prior to the consummation of this offering contain provisions that could make the following transactions more difficult: acquisition of us by means of a tender offer; acquisition of us by means of a proxy contest or otherwise; or removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the market price for our shares.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits persons deemed “interested stockholders” from engaging in a “business combination” with a publicly-held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an “interested stockholder” is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation’s voting stock. Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, such as discouraging takeover attempts that might result in a premium over the market price of our common stock.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

Special Stockholder Meetings

Our amended and restated bylaws provide that a special meeting of stockholders may be called by our board of directors, or by our President or Chief Executive Officer.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our amended and restated certificate of incorporation and our amended and restated bylaws eliminate the right of stockholders to act by written consent without a meeting.

Classified Board; Election and Removal of Directors; Filling Vacancies

Our board of directors is divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of common stock outstanding will be able to elect all of our directors. Our amended and restated certificate of incorporation provides for the removal of any of our directors only for cause and requires a stockholder vote by the holders of at least a 66-2/3% of the voting power of the then outstanding voting stock. For more information on the classified board, see “Management—Board Composition.” Furthermore, any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of the board, may only be filled by a resolution of the board of directors unless the board of directors determines that such vacancies shall be filled by the stockholders. This system of electing and removing directors and filling vacancies may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Choice of Forum

Our amended and restated certificate of incorporation provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the exclusive forum for: any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. Similarly, our amended and restated certificate of incorporation provides that the U.S. federal district courts are the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. Although our amended and restated certificate of incorporation contains the choice of forum provision described above, it is possible that a court could find that such a provision is inapplicable for a particular claim or action or that such provision is unenforceable.

Amendment of Charter Provisions

The amendment of any of the above provisions, except for the provision making it possible for our board of directors to issue undesignated preferred stock, would require approval by a stockholder vote by the holders of at least a 66-2/3% of the voting power of the then outstanding voting stock.

The provisions of the Delaware General Corporation Law, our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Limitations of Liability and Indemnification Matters

For a discussion of liability and indemnification, see “Management—Limitation on Liability and Indemnification Matters.”

The Nasdaq Global Market Listing

We have applied to list our common stock on The Nasdaq Global Market under the symbol “GRTS.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is . The transfer agent and registrar’s address is .

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our common stock. Future sales of our common stock, including shares issued upon the exercise of outstanding options or warrants, in the public market after this offering, or the perception that those sales may occur, could cause the prevailing market price for our common stock to fall or impair our ability to raise equity capital in the future. As described below, only a limited number of shares of our common stock will be available for sale in the public market for a period of several months after consummation of this offering due to contractual and legal restrictions on resale described below. Future sales of our common stock in the public market either before (to the extent permitted) or after restrictions lapse, or the perception that those sales may occur, could adversely affect the prevailing market price of our common stock at such time and our ability to raise equity capital at a time and price we deem appropriate.

Sale of Restricted Shares

Based on the number of shares of our common stock outstanding as of July 31, 2018 and assuming an initial public offering price of \$ per share (the midpoint of the range set forth on the cover of this prospectus), upon the consummation of this offering and assuming (1) the conversion of all shares of our outstanding convertible preferred stock at July 31, 2018, (2) no exercise of the underwriters' option to purchase additional shares of common stock and (3) no exercise of any of our other outstanding options, we will have outstanding an aggregate of approximately shares of common stock. Of these shares, all of the shares of common stock to be sold in this offering, and any shares sold upon exercise of the underwriters' option to purchase additional shares, will be freely tradable in the public market without restriction or further registration under the Securities Act, unless the shares are held by any of our "affiliates" as such term is defined in Rule 144 of the Securities Act. All remaining shares of common stock held by existing stockholders immediately prior to the consummation of this offering will be "restricted securities" as such term is defined in Rule 144. These restricted securities were issued and sold by us, or will be issued and sold by us, in private transactions and are eligible for public sale only if registered under the Securities Act or if they qualify for an exemption from registration under the Securities Act, including the exemptions provided by Rule 144 or Rule 701, which rules are summarized below.

As a result of the lock-up agreements referred to below and the provisions of Rule 144 and Rule 701 under the Securities Act, based on the number of shares of our common stock outstanding as of July 31, 2018 and assumptions (1)-(3) described above, the shares of our common stock (excluding the shares sold in this offering) that will be available for sale in the public market are as follows:

| <u>Approximate Number of Shares</u> | <u>First Date Available for Sale into Public Market</u> |
|-------------------------------------|---|
| shares | 180 days after the date of this prospectus upon expiration of the lock-up agreements referred to below, subject in some cases to applicable volume limitations under Rule 144 |

Lock-Up Agreements

In connection with this offering, we, our directors, our executive officers and substantially all of our other stockholders and option holders have agreed, subject to certain exceptions, with the underwriters not to dispose of or hedge any shares of our common stock or securities convertible into or exchangeable for shares of common stock during the period from the date of the lock-up agreement continuing through the date 180 days after the date of this prospectus, except with the prior written consent of Goldman Sachs & Co. LLC, Cowen and Company, LLC and Barclays Capital Inc.

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Prior to the consummation of the offering, certain of our employees, including our executive officers, and/or directors may enter into written trading plans that are intended to comply with Rule 10b5-1 under the Exchange Act. Sales under these trading plans would not be permitted until the expiration of the lock-up agreements relating to the offering described above.

Following the lock-up periods set forth in the agreements described above, and assuming that the representatives of the underwriters do not release any parties from these agreements, all of the shares of our common stock that are restricted securities or are held by our affiliates as of the date of this prospectus will be eligible for sale in the public market in compliance with Rule 144 under the Securities Act.

Rule 144

In general, under Rule 144, as currently in effect, once we have been subject to the public company reporting requirements of the Exchange Act, for at least 90 days, a person (or persons whose shares are required to be aggregated) who is not deemed to have been one of our "affiliates" for purposes of Rule 144 at any time during the three months preceding a sale, and who has beneficially owned restricted securities within the meaning of Rule 144 for at least six months, including the holding period of any prior owner other than one of our "affiliates," is entitled to sell those shares in the public market (subject to the lock-up agreement referred to above, if applicable) without complying with the manner of sale, volume limitations or notice provisions of Rule 144, but subject to compliance with the public information requirements of Rule 144. If such a person has beneficially owned the shares proposed to be sold for at least one year, including the holding period of any prior owner other than "affiliates," then such person is entitled to sell such shares in the public market without complying with any of the requirements of Rule 144 (subject to the lock-up agreement referred to above, if applicable). In general, under Rule 144, as currently in effect, once we have been subject to the public company reporting requirements of the Exchange Act for at least 90 days, our "affiliates," as defined in Rule 144, who have beneficially owned the shares proposed to be sold for at least six months are entitled to sell in the public market, upon expiration of any applicable lock-up agreements and within any three-month period, a number of those shares of our common stock that does not exceed the greater of:

- 1% of the number of common shares then outstanding, which will equal approximately _____ shares of common stock immediately after this offering (calculated as of July 31, 2018 on the basis of the assumptions (1)-(3) described above); 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 such sale.

Such sales under Rule 144 by our "affiliates" or persons selling shares on behalf of our "affiliates" are also subject to certain manner of sale provisions, notice requirements and to the availability of current public information about us. Notwithstanding the availability of Rule 144, the holders of substantially all of our restricted securities have entered into lock-up agreements as referenced above and their restricted securities will become eligible for sale (subject to the above limitations under Rule 144) upon the expiration of the restrictions set forth in those agreements.

Rule 701

In general, under Rule 701 as currently in effect, any of our employees, directors, officers, consultants or advisors who acquired common stock from us in connection with a written compensatory stock or option plan or other written agreement in compliance with Rule 701 under the Securities Act before the effective date of the registration statement of which this prospectus is a part (to the extent such common stock is not subject to a lock-up agreement) is entitled to rely on Rule 701

to resell such shares beginning 90 days after we become subject to the public company reporting requirements of the Exchange Act in reliance on Rule 144, but without compliance with the holding period requirements contained in Rule 144. Accordingly, subject to any applicable lock-up agreements, beginning 90 days after we become subject to the public company reporting requirements of the Exchange Act, under Rule 701 persons who are not our “affiliates,” as defined in Rule 144, may resell those shares without complying with the minimum holding period or public information requirements of Rule 144, and persons who are our “affiliates” may resell those shares without compliance with Rule 144’s minimum holding period requirements (subject to the terms of the lock-up agreement referred to above).

Registration Rights

Based on the number of shares outstanding as of July 31, 2018, after the consummation of this offering, the holders of approximately 128.6 million shares of our common stock, or their transferees, will, subject to the lock-up agreements referred to above, be entitled to certain rights with respect to the registration of the offer and sale of those shares under the Securities Act. For a description of these registration rights, see “Description of Capital Stock—Registration Rights.” If the offer and sale of these shares are registered, they will be freely tradable without restriction under the Securities Act.

Stock Plans

We intend to file with the SEC a registration statement under the Securities Act covering the shares of common stock that we may issue under our 2015 Equity Incentive Plan, our 2018 Incentive Award Plan and our 2018 Employee Stock Purchase Plan. Such registration statement is expected to be filed and become effective as soon as practicable after the consummation of this offering. Accordingly, shares registered under such registration statement will be available for sale in the open market following its effective date, subject to Rule 144 volume limitations and the lock-up agreements described above, if applicable.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following discussion is a summary of the material U.S. federal income tax consequences to Non-U.S. Holders (as defined below) of the purchase, ownership and disposition of our common stock issued pursuant to this offering, but does not purport to be a complete analysis of all potential tax effects. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or non-U.S. tax laws are not discussed. This discussion is based on the U.S. Internal Revenue Code of 1986, as amended (the "Code"), Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service (the "IRS"), in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a Non-U.S. Holder. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the purchase, ownership and disposition of our common stock.

This discussion is limited to Non-U.S. Holders that hold 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 U.S. federal income tax consequences relevant to a Non-U.S. Holder's particular circumstances, including the impact of the Medicare contribution tax on net investment income. In addition, it does not address consequences relevant to Non-U.S. Holders subject to special rules, including, without limitation:

- U.S. expatriates and former citizens or long-term residents of the United States;
- persons subject to the alternative minimum tax;
- persons holding our common stock as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;
- banks, insurance companies, and other financial institutions;
- brokers, dealers or traders in securities;
- "controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;
- partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein);
- tax-exempt organizations or governmental organizations;
- persons deemed to sell our common stock under the constructive sale provisions of the Code;
- tax-qualified retirement plans; and
- "qualified foreign pension funds" as defined in Section 897(l)(2) of the Code and entities all of the interests of which are held by qualified foreign pension funds.

If an entity treated as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding our common stock and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

THIS DISCUSSION IS NOT TAX ADVICE. INVESTORS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS

TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY STATE, LOCAL OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.

Definition of Non-U.S. Holder

For purposes of this discussion, a “Non-U.S. Holder” is any beneficial owner of our common stock that is neither a “U.S. person” nor an entity treated as a partnership for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof, or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that (1) is subject to the primary supervision of a U.S. court and the control of one or more “United States persons” (within the meaning of Section 7701(a)(30) of the Code), or (2) has a valid election in effect to be treated as a United States person for U.S. federal income tax purposes.

Distributions

As described in the section titled “Dividend Policy,” we do not anticipate paying any cash dividends in the foreseeable future. However, if we do make distributions of cash or property on our common stock, such distributions 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. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a Non-U.S. Holder’s adjusted tax basis in its common stock, but not below zero. Any excess will be treated as capital gain and will be treated as described below under “—Sale or Other Taxable Disposition.”

Subject to the discussion below on effectively connected income, dividends paid to a Non-U.S. Holder will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty, provided the Non-U.S. Holder furnishes a valid IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) certifying qualification for the lower treaty rate). A Non-U.S. Holder that does not timely furnish the required documentation, but that qualifies for a reduced treaty rate, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. Holders should consult their tax advisors regarding their entitlement to benefits under any applicable tax treaties.

If dividends paid to a Non-U.S. Holder are effectively connected with the Non-U.S. Holder’s conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such dividends are attributable), the Non-U.S. Holder will be exempt from the U.S. federal withholding tax described above. To claim the exemption, the Non-U.S. Holder must furnish to the applicable withholding agent a valid IRS Form W-8ECI, certifying that the dividends are effectively connected with the Non-U.S. Holder’s conduct of a trade or business within the United States.

Any such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular graduated rates. A Non-U.S. Holder that is a corporation also may be

subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected dividends, as adjusted for certain items. Non-U.S. Holders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

Sale or Other Taxable Disposition

Subject to the discussions below regarding backup withholding and FATCA, a Non-U.S. Holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other taxable disposition of our common stock unless:

- the gain is effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such gain is attributable);
- the Non-U.S. Holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or
- our common stock constitutes a U.S. real property interest ("USRPI") by reason of our status as a U.S. real property holding corporation ("USRPHC") for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular graduated rates. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty), which may be offset by certain U.S. source capital losses of the Non-U.S. Holder (even though the individual is not considered a resident of the United States), provided the Non-U.S. Holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we currently are not, and do not anticipate becoming, a USRPHC. Because the determination of whether we are a USRPHC depends, however, on the fair market value of our USRPIs relative to the fair market value of our non-U.S. real property interests and our other business assets, there can be no assurance we currently are not a USRPHC or will not become one in the future. Even if we are or were to become a USRPHC, gain arising from the sale or other taxable disposition by a Non-U.S. Holder of our common stock will not be subject to U.S. federal income tax if our common stock is "regularly traded," as defined by applicable Treasury Regulations, on an established securities market, and such Non-U.S. Holder owned, actually and constructively, 5% or less of our common stock throughout the shorter of the five-year period ending on the date of the sale or other taxable disposition or the Non-U.S. Holder's holding period.

Non-U.S. Holders should consult their tax advisors regarding potentially applicable tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Payments of dividends on our common stock will not be subject to backup withholding, provided the Non-U.S. Holder certifies its non-U.S. status, such as by furnishing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or otherwise establishes an exemption. However, information returns are

required to be filed with the IRS in connection with any dividends on our common stock paid to the Non-U.S. Holder, regardless of whether any tax was actually withheld. In addition, proceeds of the sale or other taxable disposition of our common stock within the United States or conducted through certain U.S.-related brokers generally will not be subject to backup withholding or information reporting if the applicable withholding agent receives the certification described above or the Non-U.S. Holder otherwise establishes an exemption. Proceeds of a disposition of our common stock conducted through a non-U.S. office of a non-U.S. broker that does not have certain enumerated relationships with the United States generally will not be subject to backup withholding or information reporting.

Copies of information returns that are filed with the IRS may also be made available under the provisions of an applicable treaty or agreement to the tax authorities of the country in which the Non-U.S. Holder resides or is established.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a Non-U.S. Holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under Sections 1471 to 1474 of the Code (such Sections commonly referred to as the Foreign Account Tax Compliance Act, or "FATCA") on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends on, or gross proceeds from the sale or other disposition of, our common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (1) the foreign financial institution undertakes certain diligence and reporting obligations, (2) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (3) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (1) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States-owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends on our common stock, and, beginning on January 1, 2019, will apply to payments of gross proceeds from the sale or other disposition of such stock.

Prospective investors should consult their tax advisors regarding the potential application of withholding under FATCA to their investment in our common stock.

UNDERWRITING

We and the underwriters named below have entered into an underwriting agreement with respect to the shares being offered. Subject to certain conditions, each underwriter has severally agreed to purchase the number of shares indicated in the following table. Goldman Sachs & Co. LLC, Cowen and Company, LLC and Barclays Capital Inc. are the representatives of the underwriters.

| <u>Underwriters</u> | <u>Number of Shares</u> |
|-------------------------|-------------------------|
| Goldman Sachs & Co. LLC | |
| Cowen and Company, LLC | |
| Barclays Capital Inc. | |
| BTIG, LLC | |
| Total | |

The underwriters are committed to take and pay for all of the shares being offered, if any are taken, other than the shares covered by the option described below unless and until this option is exercised.

The underwriters have an option to buy up to an additional _____ shares from us to cover sales by the underwriters of a greater number of shares than the total number set forth in the table above. They may exercise that option for 30 days. If any shares are purchased pursuant to this option, the underwriters will severally purchase shares in approximately the same proportion as set forth in the table above.

The following table shows the per share and total underwriting discounts and commissions to be paid to the underwriters by us. Such amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to _____ additional shares from us.

| | <u>No Exercise</u> | <u>Full Exercise</u> |
|-----------|--------------------|----------------------|
| Per Share | \$ | \$ |
| Total | \$ | \$ |

Shares sold by the underwriters to the public will initially be offered at the initial public offering price set forth on the cover of this prospectus. Any shares sold by the underwriters to securities dealers may be sold at a discount of up to \$ _____ per share from the initial public offering price. After the initial offering of the shares, the representatives may change the offering price and the other selling terms. The offering of the shares by the underwriters is subject to receipt and acceptance and subject to the underwriters' right to reject any order in whole or in part.

We and our executive officers, directors, and holders of substantially all of our common stock and securities convertible into or exchangeable for our common stock have agreed or will agree with the underwriters, subject to certain exceptions, not to dispose of or hedge any of our or their common stock or securities convertible into or exchangeable for shares of common stock during the period from the date of this prospectus continuing through the date 180 days after the date of this prospectus, except with the prior written consent of Goldman Sachs & Co. LLC, Cowen and Company, LLC and Barclays Capital Inc. This agreement does not apply to any existing employee benefit plans. See the section titled "Shares Eligible for Future Sale" for a discussion of certain transfer restrictions.

Prior to the offering, there has been no public market for the shares. The initial public offering price has been negotiated among the company and the representatives. Among the factors to be

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considered in determining the initial public offering price of the shares, in addition to prevailing market conditions, will be the company's historical performance, estimates of the business potential and earnings prospects of the company, an assessment of the company's management and the consideration of the above factors in relation to market valuation of companies in related businesses.

We have applied to list our common stock on The Nasdaq Global Market under the symbol "GRTS".

In connection with the offering, the underwriters may purchase and sell shares of our common stock in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering, and a short position represents the amount of such sales that have not been covered by subsequent purchases. A "covered short position" is a short position that is not greater than the amount of additional shares for which the underwriters' option described above may be exercised. The underwriters may cover any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to cover the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase additional shares pursuant to the option described above. "Naked" short sales are any short sales that create a short position greater than the amount of additional shares for which the option described above may be exercised. The underwriters must cover any such naked short 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 the offering. Stabilizing transactions consist of various bids for or purchases of common stock made by the underwriters in the open market prior to the completion of the offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Purchases to cover a short position and stabilizing transactions, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of our common stock, and together with the imposition of the penalty bid, may stabilize, maintain or otherwise affect the market price of our common stock. As a result, the price of our common stock may be higher than the price that otherwise might exist in the open market. The underwriters are not required to engage in these activities and may end any of these activities at any time. These transactions may be effected on The Nasdaq Global Market, in the over-the-counter market or otherwise.

We estimate that our share of the total expenses of the offering, excluding underwriting discounts and commissions, will be approximately \$ million. We have agreed to reimburse the underwriters for certain of their expenses in an amount up to \$.

We have agreed to indemnify the several underwriters against certain liabilities, including liabilities under the Securities Act.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. Certain of the underwriters and their respective affiliates have provided, and may in the future provide, a variety of these services to

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the issuer and to persons and entities with relationships with the issuer, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and their respective affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities or instruments of the issuer (directly, as collateral securing other obligations or otherwise) or persons and entities with relationships with the issuer. The underwriters and their respective affiliates may also communicate independent investment recommendations, market color or trading ideas or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of our common stock may be made at any time under the following exemptions under the Prospectus Directive:

- To any legal entity which is a qualified investor as defined in the Prospectus Directive;
- To fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the representatives for any such offer; or
- In any other circumstances falling within Article 3(2) of the Prospectus Directive;

provided that no such offer or shares of our common stock shall require us or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to public" in relation to our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and our common stock to be offered so as to enable an investor to decide to purchase our common stock, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, and the expression "Prospectus Directive" means Directive 2003/71/EC (as amended), including by Directive 2010/73/EU and includes any relevant implementing measure in the Relevant Member State.

This European Economic Area selling restriction is in addition to any other selling restrictions set out below.

United Kingdom

In the United Kingdom, this prospectus is only addressed to and directed at qualified investors who are (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the Order); or (ii) high net worth entities and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). Any investment or investment activity to

which this prospectus relates is available only to relevant persons and will only be engaged in with relevant persons. Any person who is not a relevant person should not act or rely on this prospectus or any of its contents.

Canada

The securities may be sold in Canada 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 form, 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 (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.

Hong Kong

The securities may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong) ("Companies (Winding Up and Miscellaneous Provisions) Ordinance") or which do not constitute an invitation to the public within the meaning of the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) ("Securities and Futures Ordinance"), or (ii) to "professional investors" as defined in the Securities and Futures Ordinance and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance, and no advertisement, invitation or document relating to the securities may be issued or may be in the possession of any person for the purpose of issue (in each case 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 in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" in Hong Kong as defined in the Securities and Futures Ordinance and any rules made thereunder.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor (as defined under Section 4A of the Securities and Futures Act, Chapter 289 of

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Singapore (the “SFA”) under 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, in each case subject to conditions set forth in the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is 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, the securities (as defined in Section 239(1) of the SFA) of that corporation shall not be transferable for 6 months after that corporation has acquired the shares under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer in that corporation’s securities pursuant to Section 275(1A) of the SFA, (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore (“Regulation 32”).

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is a trust (where the trustee is not an accredited investor (as defined in Section 4A of the SFA)) whose sole purpose is to hold investments and each beneficiary of the trust is an accredited investor, the beneficiaries’ rights and interest (howsoever described) in that trust shall not be transferable for 6 months after that trust has acquired the shares under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer that is made on terms that such rights or interest are acquired at a consideration of not less than S\$200,000 (or its equivalent in a foreign currency) for each transaction (whether such amount is to be paid for in cash or by exchange of securities or other assets), (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32.

Japan

The securities have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended), or the FIEA. The securities may not be offered or sold, directly or indirectly, in Japan or to or for the benefit of any resident of Japan (including any person resident in Japan or any corporation or other entity organized under the laws of Japan) or to others for reoffering or resale, directly or indirectly, in Japan or to or for the benefit of any resident of Japan, except pursuant to an exemption from the registration requirements of the FIEA and otherwise in compliance with any relevant laws and regulations of Japan.

Australia

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission (“ASIC”), in relation to the offering. This offering document does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001 (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.

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Any offer in Australia of the shares may only be made to persons (the “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 shares without disclosure to investors under Chapter 6D of the Corporations Act.

The shares 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 shares must observe such Australian on-sale restrictions.

This offering document 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 offering document is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

Dubai International Financial Centre

This offering document relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority (“DFSA”). This offering document 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 in this prospectus and has no responsibility for the offering document. The securities to which this offering document relates 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 offering document you should consult an authorized financial advisor.

Switzerland

We have not and will not register with the Swiss Financial Market Supervisory Authority (“FINMA”) as a foreign collective investment scheme pursuant to Article 119 of the Federal Act on Collective Investment Scheme of 23 June 2006, as amended (“CISA”), and accordingly the securities being offered pursuant to this prospectus have not and will not be approved, and may not be licenseable, with FINMA. Therefore, the securities have not been authorized for distribution by FINMA as a foreign collective investment scheme pursuant to Article 119 CISA and the securities offered hereby may not be offered to the public (as this term is defined in Article 3 CISA) in or from Switzerland. The securities may solely be offered to “qualified investors,” as this term is defined in Article 10 CISA, and in the circumstances set out in Article 3 of the Ordinance on Collective Investment Scheme of 22 November 2006, as amended (“CISO”), such that there is no public offer. Investors, however, do not benefit from protection under CISA or CISO or supervision by FINMA. This prospectus and any other materials relating to the securities are strictly personal and confidential to each offeree and do not constitute an offer to any other person. This prospectus may only be used by those qualified investors to whom it has been handed out in connection with the offer described in this prospectus and may neither directly or indirectly be distributed or made available to any person or entity other than its recipients. It may not be used in connection with any other offer and shall in particular not be copied and/or distributed to the public in Switzerland or from Switzerland. This

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prospectus does not constitute an issue prospectus as that term is understood pursuant to Article 652a and/or 1156 of the Swiss Federal Code of Obligations. We have not applied for a listing of the securities on the SIX Swiss Exchange or any other regulated securities market in Switzerland, and consequently, the information presented in this prospectus does not necessarily comply with the information standards set out in the listing rules of the SIX Swiss Exchange and corresponding prospectus schemes annexed to the listing rules of the SIX Swiss Exchange.

LEGAL MATTERS

The validity of the issuance of our common stock offered in this prospectus will be passed upon for us by Latham & Watkins LLP, Menlo Park, California. Cooley LLP, San Francisco, California, is acting as counsel for the underwriters in connection with this offering. Latham & Watkins LLP and certain attorneys and investment funds affiliated with the firm own shares of our convertible preferred stock which will be converted into an aggregate of 88,614 shares of common stock immediately prior to the completion of this offering.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements and related notes at December 31, 2016 and 2017, and for each of the two years in the period ended December 31, 2017, as set forth in their report (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 2 to the financial statements). We have included our financial statements and related notes in this prospectus and elsewhere in the registration statement in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of common stock offered hereby. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. For further information with respect to Gritstone Oncology, Inc. and the common stock offered hereby, reference is made to the registration statement and the exhibits and schedules filed therewith. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement. A copy of the registration statement and the exhibits and schedules filed therewith may be inspected without charge at the public reference room maintained by the SEC, located at 100 F Street N.E., Room 1580, Washington, D.C. 20549, and copies of all or any part of the registration statement may be obtained from such offices upon the payment of the fees prescribed by the SEC. Please call the SEC at 1-800-SEC-0330 for further information about the public reference room. The SEC also maintains a website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the SEC. The address is www.sec.gov.

Upon consummation of this offering, we will become subject to the information and periodic reporting requirements of the Exchange Act and, in accordance therewith, will file periodic reports, proxy statements and other information with the SEC. Such periodic reports, proxy statements and other information will be available for inspection and copying at the public reference room and website of the SEC referred to above. We maintain a website at www.gritstoneoncology.com. Upon consummation of this offering, you may access our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act with the SEC free of charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. The reference to our website address does not constitute incorporation by reference of the information contained on our website, and you should not consider the contents of our website in making an investment decision with respect to our common stock.

GRITSTONE ONCOLOGY, INC.

Index to Financial Statements

For the Years Ended December 31, 2016 and 2017

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of
Gritstone Oncology, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Gritstone Oncology, Inc. (the Company) as of December 31, 2016 and 2017, and the related statements of operations and comprehensive loss, statements of stockholders' equity and cash flows for the years then ended, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2016 and 2017, and the results of its operations and its cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

The Company's Ability to Continue as a Going Concern

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the financial statements, the Company has suffered recurring losses from operations and has stated that substantial doubt exists about the Company's ability to continue as a going concern. Management's evaluation of the events and conditions and management's plans regarding these matters are also described in Note 2. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. 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 audits in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2016.

Redwood City, California
May 4, 2018

Gritstone Oncology, Inc.
Balance Sheets
(In thousands, except share amounts)

| | December 31, | |
|--|------------------|-------------------|
| | 2016 | 2017 |
| Assets | | |
| Current assets: | | |
| Cash and cash equivalents | \$ 12,410 | \$ 39,007 |
| Marketable securities | 25,097 | 46,946 |
| Prepaid expenses and other current assets | 884 | 2,526 |
| Total current assets | 38,391 | 88,479 |
| Property and equipment, net | 7,490 | 27,211 |
| Deposits and other long-term assets | 540 | 1,610 |
| Total assets | <u>\$ 46,421</u> | <u>\$ 117,300</u> |
| Liabilities and stockholders' equity | | |
| Current liabilities: | | |
| Accounts payable | \$ 762 | \$ 3,935 |
| Accrued compensation | 1,037 | 2,227 |
| Accrued liabilities | 695 | 1,490 |
| Total current liabilities | 2,494 | 7,652 |
| Deferred rent, net of current portion | 2,060 | 1,749 |
| Other non-current liabilities | 178 | 96 |
| Lease financing obligation, net of current portion | — | 10,521 |
| Total liabilities | 4,732 | 20,018 |
| Commitments and contingencies (Note 6) | | |
| Stockholders' equity: | | |
| Convertible preferred stock, \$0.0001 par value; 110,000,000 and 125,362,551 shares authorized at December 31, 2016 and 2017, respectively; 61,260,000 and 122,803,319 shares issued and outstanding at December 31, 2016 and 2017, respectively; aggregate liquidation preference of \$61,260 and \$157,268 at December 31, 2016 and 2017, respectively | 61,139 | 156,937 |
| Common stock, \$0.0001 par value; 160,000,000 shares authorized at December 31, 2016 and 2017; 12,501,385 and 14,852,480 shares issued and outstanding at December 31, 2016 and 2017, respectively | 1 | 1 |
| Additional paid-in capital | 802 | 2,045 |
| Accumulated other comprehensive loss | (3) | (74) |
| Accumulated deficit | (20,250) | (61,627) |
| Total stockholders' equity | 41,689 | 97,282 |
| Total liabilities and stockholders' equity | <u>\$ 46,421</u> | <u>\$ 117,300</u> |

See accompanying notes to financial statements.

Gritstone Oncology, Inc.
Statements of Operations and Comprehensive Loss
(In thousands, except share and per share amounts)

| | Year Ended December 31 | |
|---|------------------------|-------------|
| | 2016 | 2017 |
| Operating expenses: | | |
| Research and development | \$ 13,916 | \$ 35,691 |
| General and administrative | 5,064 | 6,072 |
| Total operating expenses | 18,980 | 41,763 |
| Loss from operations | (18,980) | (41,763) |
| Interest income, net | 230 | 386 |
| Net loss | (18,750) | (41,377) |
| Other comprehensive loss: | | |
| Unrealized loss on marketable securities, net of tax | (3) | (71) |
| Comprehensive loss | \$ (18,753) | \$ (41,448) |
| Net loss per share, basic and diluted | \$ (1.62) | \$ (3.00) |
| Weighted-average number of shares used in computing net loss per share, basic and diluted | 11,540,581 | 13,793,417 |
| Pro forma net loss per share, basic and diluted (unaudited) | | \$ (0.44) |
| Weighted-average number of shares used in computing pro forma net loss per share, basic and diluted (unaudited) | | 94,529,860 |

See accompanying notes to financial statements.

Gritstone Oncology, Inc.
Statements of Stockholders' Equity
(In thousands, except share amounts)

| | Convertible Preferred Stock | | Common Stock | | Additional Paid-In Capital | Accumulated Other Comprehensive Loss | Accumulated Deficit | Total Stockholders' Equity |
|--|-----------------------------|------------------|-------------------|-------------|----------------------------|--------------------------------------|---------------------|----------------------------|
| | Shares | Amount | Shares | Amount | | | | |
| Balances at December 31, 2015 | 25,525,000 | \$ 25,425 | 11,437,328 | \$ 1 | \$ 61 | \$ — | \$ (1,500) | \$ 23,987 |
| Issuance of Series A convertible preferred stock at \$1.00 per share for cash, net of issuance costs of \$21 | 35,735,000 | 35,714 | — | — | — | — | — | 35,714 |
| Unrealized loss on marketable securities, net of tax | — | — | — | — | — | (3) | — | (3) |
| Lapse of repurchase rights related to common stock issued pursuant to early exercises | — | — | 1,064,057 | — | 53 | — | — | 53 |
| Stock-based compensation | — | — | — | — | 597 | — | — | 597 |
| Issuance of common stock warrants for license | — | — | — | — | 91 | — | — | 91 |
| Net loss | — | — | — | — | — | — | (18,750) | (18,750) |
| Balances at December 31, 2016 | 61,260,000 | 61,139 | 12,501,385 | 1 | 802 | (3) | (20,250) | 41,689 |
| Issuance of Series B convertible preferred stock in at \$1.56 per share for cash, net of issuance costs of \$210 | 61,543,319 | 95,798 | — | — | — | — | — | 95,798 |
| Unrealized loss on marketable securities, net of tax | — | — | — | — | — | (71) | — | (71) |
| Lapse of repurchase rights related to common stock issued pursuant to early exercises | — | — | 2,338,595 | — | 117 | — | — | 117 |
| Issuance of common stock upon exercise of stock options | — | — | 12,500 | — | — | — | — | — |
| Stock-based compensation | — | — | — | — | 1,126 | — | — | 1,126 |
| Net loss | — | — | — | — | — | — | (41,377) | (41,377) |
| Balances at December 31, 2017 | <u>122,803,319</u> | <u>\$156,937</u> | <u>14,852,480</u> | <u>\$ 1</u> | <u>\$ 2,045</u> | <u>\$ (74)</u> | <u>\$ (61,627)</u> | <u>\$ 97,282</u> |

See accompanying notes to financial statements.

Gritstone Oncology, Inc.
Statements of Cash Flows

(In thousands)

| | <u>Year Ended December 31,</u> | |
|---|--------------------------------|------------------|
| | <u>2016</u> | <u>2017</u> |
| Operating activities | | |
| Net loss | \$ (18,750) | \$ (41,377) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | |
| Depreciation | 823 | 1,970 |
| Net amortization of premiums and discounts on marketable securities | 43 | (158) |
| Stock-based compensation | 597 | 1,126 |
| Warrant issuance in conjunction with license agreement | 91 | — |
| Changes in operating assets and liabilities: | | |
| Prepaid expenses and other current assets | (459) | (416) |
| Deposits and other long term assets | (487) | (78) |
| Accounts payable | (760) | 2,273 |
| Accrued compensation | 1,018 | 1,190 |
| Accrued and other non-current liabilities | 532 | 810 |
| Deferred rent | 2,060 | (311) |
| Net cash used in operating activities | <u>(15,292)</u> | <u>(34,971)</u> |
| Investing activities | | |
| Purchase of marketable securities | (47,993) | (63,228) |
| Maturities of marketable securities | 22,850 | 41,467 |
| Purchase of property and equipment | (6,984) | (11,522) |
| Disposition of property and equipment | — | 31 |
| Net cash used in investing activities | <u>(32,127)</u> | <u>(33,252)</u> |
| Financing activities | | |
| Proceeds from issuance of common stock under equity incentive plan | 232 | 14 |
| Proceeds from issuance of convertible preferred stock, net of issuance costs | 35,714 | 95,798 |
| Net cash provided by financing activities | <u>35,946</u> | <u>95,812</u> |
| Net (decrease) increase in cash, cash equivalents and restricted cash | (11,473) | 27,589 |
| Cash, cash equivalents and restricted cash at beginning of period | 23,883 | 12,410 |
| Cash, cash equivalents and restricted cash at end of period | <u>\$ 12,410</u> | <u>\$ 39,999</u> |
| Supplemental disclosures of non-cash investing and financing information | | |
| Property and equipment purchases accrued but not yet paid | \$ 61 | \$ 900 |
| Building and improvements capitalized under lease financing transaction | \$ — | \$ 9,300 |
| Receivable from lessor funded financing | \$ — | \$ 1,226 |

See accompanying notes to financial statements.

**Gritstone Oncology, Inc.
Notes to Financial Statements**

December 31, 2017

1. Organization and Description of Business

Gritstone Oncology, Inc. (the Company) is an immuno-oncology company developing personalized cancer immunotherapies to fight multiple cancer types. The Company was incorporated in the state of Delaware in August 2015, and is based in Emeryville, California and Cambridge, Massachusetts, with a manufacturing facility in Pleasanton, California. The Company operates in one segment.

2. Summary of Significant Accounting Policies

Basis of Presentation

The Company's financial statements have been prepared in accordance with United States generally accepted accounting principles (U.S. GAAP). Management has reviewed and evaluated subsequent events from the balance sheet date of December 31, 2017, through the financial statements issue date of May 4, 2018.

Unaudited Pro Forma Information

Immediately prior to the completion of this offering, all outstanding shares of convertible preferred stock will convert into common stock. Pro forma basic and diluted net loss per share has been computed to give effect to the conversion of all outstanding convertible preferred stock into shares of common stock. The unaudited pro forma net loss per share for the year ended December 31, 2017 was computed using the weighted-average number of shares of common stock outstanding, including the pro forma effect of the conversion of all outstanding shares of convertible preferred stock into shares of common stock, as if such conversion had occurred at the beginning of the period, or their issuance dates if later. Pro forma net loss per share does not include the shares expected to be sold and related proceeds to be received from the IPO.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as of the date of the financial statements and the reported amounts of expenses during the reporting period. On an ongoing basis, management evaluates its estimates, including those related to preclinical study trial accruals, fair value of assets and liabilities, the fair value of leased buildings and other assumptions associated with lease financing transactions, and the fair value of common stock and stock-based compensation. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions that management believes to be reasonable under the circumstances. Actual results could differ from those estimates.

Going Concern

The Company has incurred significant losses and negative cash flows from operations since its inception and had an accumulated deficit of \$61.6 million at December 31, 2017 and does not expect to experience positive cash flows in the foreseeable future.

Gritstone Oncology, Inc.
Notes to Financial Statements

December 31, 2017

As of December 31, 2017, the Company had \$86.0 million in cash, cash equivalents and marketable securities and working capital of \$80.8 million. Management expects to incur additional losses in the future to conduct product research and development and to conduct pre-commercialization activities and recognizes the need to raise additional capital to fully implement its business plan. The Company intends to raise such capital through the sale of convertible stock, additional equity, debt financings or strategic alliances with third parties. However, there can be no assurance that the Company will be successful in acquiring additional funding at levels sufficient to fund its operations or on terms acceptable to the Company. These conditions raise substantial doubt about the Company's ability to continue as a going concern for a period of one year from the date of the issuance of these financial statements. If the Company is unsuccessful in its efforts to raise additional financing, the Company could be required to significantly reduce operating expenses and delay, reduce the scope of or eliminate some of its development programs or its future commercialization efforts, out-license intellectual property rights to its product candidates and sell unsecured assets, or a combination of the above, any of which may have a material adverse effect on the Company's business, results of operations, financial condition and/or its ability to fund its scheduled obligations on a timely basis or at all. The accompanying financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. The financial statements do not reflect any adjustments relating to the recoverability and classification of assets or the amounts and classification of liabilities that might be necessary if the Company is unable to continue as a going concern.

Fair Value of Financial Instruments

Accounting Standards Codification (ASC) Topic 820, *Fair Value Measurement*, establishes a fair value hierarchy for instruments measured at fair value that distinguishes between assumptions based on market data (observable inputs) and the Company's own assumptions (unobservable inputs). Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the inputs that market participants would use in pricing the asset or liability, and are developed based on the best information available in the circumstances.

ASC 820 identifies fair value as the exchange price, or exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As a basis for considering market participant assumptions in fair value measurements, ASC 820 establishes a three-tier fair value hierarchy that distinguishes between the following:

- Level 1 inputs are quoted prices in active markets that are accessible at the market date for identical assets or liabilities.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 inputs are unobservable inputs that reflect the Company's own assumptions about the assumptions market participants would use in pricing the assets or liability. Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the

Gritstone Oncology, Inc.
Notes to Financial Statements

December 31, 2017

degree of judgment exercised by the Company in determining fair value is greatest for instruments categorized in Level 3. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value instrument.

The carrying amounts reflected on the balance sheets for cash and cash equivalents, prepaid expenses and other current assets, accounts payable, accrued compensation and accrued liabilities approximate their fair values due to their short-term nature.

Cash, Cash Equivalents and Restricted Cash

Cash equivalents, which consist primarily of highly liquid investments with maturities of three months or less when purchased, are stated at cost which approximates fair value. These assets include investments in money market funds that invest in U.S. Treasury obligations and certificates of deposit which are stated at fair value.

The Company has issued a letter of credit under a lease agreement which has been collateralized by a cash deposit for an equal amount and is recorded within deposits and other long-term assets on the balance sheet based on the term of the underlying lease. The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the balance sheets that sum to the total of the same amounts shown in the statements of cash flows (in thousands).

| | December 31, | |
|--|---------------------|-----------------|
| | 2016 | 2017 |
| Cash and cash equivalents | <u>\$12,410</u> | <u>\$39,007</u> |
| Restricted cash | <u>—</u> | <u>992</u> |
| Total cash, cash equivalents and restricted cash | <u>\$12,410</u> | <u>\$39,999</u> |

Marketable Securities

The Company invests its excess cash in investment grade short-term fixed income securities. Such investments in marketable securities are considered available for sale, and reported at fair value with unrealized gains and losses included as a component of accumulated other comprehensive income (loss). Marketable securities with original maturities of greater than 90 days from the date of purchase but less than one year from the balance sheet date are classified as short-term, while marketable securities with maturities in one year or beyond one year from the balance sheet date are classified as long term. The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity, which is included in interest income on the statements of operations and comprehensive loss. Realized gains and losses and declines in value judged to be other than temporary, if any, on available-for-sale securities are included in interest and other income (expense), net. The cost of securities sold is determined using specific identification method.

The Company periodically evaluates whether declines in fair values of its marketable securities below their book value are other than temporary. This evaluation consists of several qualitative and quantitative factors regarding the severity and duration of the unrealized loss as well as the Company's ability and intent to hold the marketable security until a forecasted recovery occurs. Additionally, the Company assesses whether it has plans to sell the security or it is more likely than not it will be

**Gritstone Oncology, Inc.
Notes to Financial Statements**

December 31, 2017

required to sell any marketable securities before recovery of its amortized cost basis. Factors considered include quoted market prices, recent financial results and operating trends, implied values from any recent transactions or offers of investee securities, credit quality of debt instrument issuers, other publicly available information that may affect the value of the marketable security, duration and severity of the decline in value, and the Company's strategy and intentions for holding the marketable security. To date the Company has not recorded any impairment charges on its marketable securities related to other-than-temporary declines in market value.

Concentrations of Credit Risk and Other Risks and Uncertainties

Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash, cash equivalents, and marketable securities. Cash, cash equivalents and marketable securities are invested through banks and other financial institutions in the United States. Such deposits may be in excess of federally insured limits. The Company maintains cash equivalents and marketable securities with various high-credit-quality and capitalized financial institutions. The Company has not experienced any credit losses in such accounts and does not believe it is exposed to any significant credit risk on these funds.

The Company's investment policy limits investments to certain types of securities issued by the U.S. government, its agencies, and institutions with investment-grade credit ratings and places restrictions on maturities and concentration by type and issuer. The Company is exposed to credit risk in the event of a default by the financial institutions holding its cash, cash equivalents, and marketable securities and issuers of marketable securities to the extent recorded on the balance sheets. Through December 31, 2017, the Company has no off-balance sheet concentrations of credit risk.

The Company is subject to a number of risks similar to those of other preclinical-stage immunotherapy companies, including dependence on key individuals; the need to develop commercially viable therapeutics; competition from other companies, many of which are larger and better capitalized; and the need to obtain adequate additional financing to fund the development of its products. The Company currently depends on third-party suppliers for key materials and services used in its research and development manufacturing process, and is subject to certain risks related to the loss of these third-party suppliers or their inability to supply the Company with adequate materials and services.

Property and Equipment, Net

Property and equipment are stated at cost, less accumulated depreciation and amortization. Maintenance and repairs that do not improve or extend the lives of the respective assets are expensed to operations as incurred.

Depreciation is calculated using the straight-line method over the estimated useful lives of the respective assets, which are as follows:

| Asset | Estimated Useful Life |
|---------------------------------|--------------------------------------|
| Computer equipment and software | 3 to 5 years |
| Furniture and fixtures | 5 years |
| Laboratory equipment | 5 to 7 years |
| Leasehold improvements | Shorter of useful life or lease term |

**Gritstone Oncology, Inc.
Notes to Financial Statements**

December 31, 2017

Property and equipment includes a leased building which did not meet the sale-leaseback criteria and was recorded at its fair value plus the cost of improvements made during the construction period. The leased building is being depreciated over the lease term to a residual value that will approximate the remaining lease financing obligation at the end of the lease (see Note 6).

Impairment of Long-Lived Assets

The Company evaluates long-lived assets, including property and equipment, for impairment whenever events or changes in business circumstances indicate that the carrying amount of the asset may not be fully recoverable. An impairment loss would be recognized when estimated undiscounted future cash flows expected to result from the use of the asset and its eventual disposition are less than its carrying amount. Impairment, if any, is measured as the amount by which the carrying amount of a long-lived asset exceeds its fair value. No impairment losses have been recorded for the periods presented.

Stock-Based Compensation

The Company measures and recognize compensation expense for all stock-based awards made to employees and directors based on the grant date estimated fair value of each award. Such expense is recognized on a straight-line basis over the requisite service period which is generally the vesting period for the entire award. Expense is adjusted for estimated forfeitures. Forfeitures of awards are estimated based on historical forfeiture experience and the experience of other companies in the same industry. The estimate of forfeitures will be adjusted over the service period to the extent that actual forfeitures differ, or are expected to differ, from prior estimates.

The valuation model used for calculating the fair value of awards for stock compensation expense is the Black-Scholes option-pricing model (the Black-Scholes model). The Black-Scholes model requires management to make assumptions and judgments about the variables used in the calculation, including the expected term (weighted-average period of time that the options granted are expected to be outstanding), the expected volatility of common stock, an assumed risk-free interest rate, and expected dividends the Company may pay. Management uses the simplified calculation of the expected term. Volatility is based on an average of the historical volatilities of the common stock of entities with characteristics similar to the Company's. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option. The Company uses an assumed dividend yield of zero as the Company has never paid dividends and has no current plans to pay any dividends on its common stock.

Management recognizes stock-based compensation expense for stock options granted to non-employees based on the estimated fair value of the award on the measurement dates using the Black-Scholes model. The estimated fair value of options granted to non-employees is re-measured at each reporting period using the Black-Scholes model until the awards vest and the resulting change in value, if any, is recognized in the statement of operations and comprehensive loss

Research and Development Expenses

All research and development costs, including work performed by third parties, are expensed as incurred. Research and development costs consist of salaries and other personnel-related expenses,

**Gritstone Oncology, Inc.
Notes to Financial Statements**

December 31, 2017

including associated stock-based compensation, consulting fees, laboratory supplies, and facility costs, as well as fees paid to other entities that conduct certain research and development activities on behalf of the Company. Costs to develop the Company's technologies are recorded as research and development expense unless certain costs which meet the criteria to be capitalized as internal-use software costs is met. Payments made prior to the receipt of goods or services to be used in research and development are capitalized until the goods are received or services are rendered.

The Company has and may continue to enter into license agreements to access and utilize certain technology. In each case, the Company evaluates of the license agreement results in the acquisition of an asset or a business. To date, none of the Company's license agreements have been considered to be acquisitions of businesses. For asset acquisitions, the upfront payments to acquire such licenses, as well as any future milestone payments, are immediately recognized as research and development expense when paid, provided that there is no alternative future use of the rights in other research and development projects. These license agreements may also include contingent consideration in the form of cash payments to be made for future milestone events. The Company assess whether such contingent consideration meets the definition of a derivative and to date the Company has determined that such contingent consideration are not derivatives.

Pre-clinical costs are a component of research and development expense. The Company accrues and expenses pre-clinical trial activities performed by third parties based upon actual work completed in accordance with agreements established with its service providers. The Company determines the actual costs through discussions with internal personnel and external service providers as to the progress or stage of completion of services and the agreed-upon fee to be paid for such services.

Leases and Deferred Rent and Lease Financing Obligation

The Company rents its office space and facilities under non-cancelable operating lease agreements and recognize related rent expense on a straight-line basis over the term of the lease. The Company's lease agreements contain rent holidays, scheduled rent increases, and renewal options. Rent holidays and scheduled rent increases are included in the determination of rent expense to be recorded ratably over the lease term. The Company does not assume renewals in its determination of the lease term unless they are deemed to be reasonably assured at the inception of the lease. The Company begins recognizing rent expense on the date that it obtains the legal right to use and control the leased space. Deferred rent consists of the difference between cash payments and the recognition of rent expense on a straight-line basis for the buildings the Company occupies.

Funding of leasehold improvements by the Company's landlord is accounted for as a tenant improvement allowance and recorded as current and non-current deferred rent liabilities and amortized on a straight-line basis as a reduction of rent expense over the term of the lease.

In certain arrangements, the Company is involved in the construction of improvements to buildings it is leasing. To the extent the Company is involved with the structural improvements of the construction project or takes construction risk, the Company is considered to be the owner of the building and related improvements for accounting purposes during the construction period. The Company records the fair value of the building and related improvements subject to the lease within property and equipment on the balance sheet. The Company also records a corresponding lease financing obligation on its balance sheet representing the amounts financed by the lessor for the

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building and lessor financed improvements. Lessor financed improvement incentives due but not yet received of \$1.2 million at December 31, 2017 were recorded as prepaid expense and other current assets on the balance sheet. Such amounts were fully collected in April 2018. Once a construction project is complete, the Company considers the requirements for sale-leaseback accounting treatment. If the Company concludes the arrangement does not qualify for sale-leaseback accounting treatment, the building and related improvements remain on the Company's balance sheet and are subject to depreciation and assessment of impairment.

For such arrangements, at both pre and post the construction period, the Company bifurcates its lease payments into a portion allocated to the building and a portion allocated to the parcel of land on which the building has been built. The portion of the lease payments allocated to the land is treated for accounting purposes as operating lease payments, and therefore is recorded as rent expense in the statements of operations and comprehensive loss. The portion of the lease payments allocated to the building is further bifurcated into a portion allocated to interest expense and a portion allocated to reduce the lease financing obligation. The interest rate used for the lease financing obligation represents the Company's estimated incremental borrowing rate at the inception of the lease, adjusted to reduce any built in loss.

Income Taxes

Management accounts for income taxes under the liability method. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates that will be in effect when the differences are expected to reverse. Valuation allowances are established when necessary to reduce deferred tax assets to the amounts expected to be realized.

The Company recognizes and measures uncertain tax positions using a two—step approach set forth in authoritative guidance. The first step is to evaluate the tax position taken or expected to be taken by determining whether the weight of available evidence indicates that it is more likely than not that the tax position will be sustained in an audit, including resolution of any related appeals or litigation processes. The second step is to measure the tax benefit as the largest amount that is more than 50% likely to be realized upon ultimate settlement. Significant judgment is required to evaluate uncertain tax positions. The Company evaluates uncertain tax positions on a regular basis. The evaluations are based on a number of factors, including changes in facts and circumstances, changes in tax law, correspondence with tax authorities during the course of the audit, and effective settlement of audit issues. The provision for income taxes includes the effects of any accruals that the Company believes are appropriate. It is the Company's policy to recognize interest and penalties related to income tax matters in income tax expense. Through December 31, 2017, the Company had not accrued interest or penalties related to uncertain tax positions.

On December 22, 2017, the Securities and Exchange Commission Staff issued Staff Accounting Bulletin No. 118 (SAB 118) to address the accounting implications of U.S. federal tax reform enacted on December 22, 2017. SAB 118 allows a company to record provisional amounts during a measurement period not to extend beyond one year from the enactment date (see Note 11).

Comprehensive Loss

Comprehensive loss includes net loss and certain changes in stockholders' equity that are excluded from net loss, primarily unrealized losses on the Company's marketable securities.

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Net Loss Per Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock outstanding during the period, without consideration for common stock equivalents. Diluted net loss per share is the same as basic net loss per share, since the effects of potentially dilutive securities are antidilutive given the net loss for each period presented.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09 (ASU 2014-09), *Revenue from Contracts with Customers* (Topic 606), and further updated through ASU 2016-12 (ASU 2016-12), which amends the existing accounting standards for revenue recognition. For public entities, this standard is effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. For all other entities, this standard is effective for annual reporting periods beginning after December 15, 2018, and interim periods within annual periods beginning after December 15, 2019. Early adoption is permitted. Under Topic 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of Topic 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. Topic 606 also impacts certain other areas, such as the accounting for costs to obtain or fulfill a contract. The standard also requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. Effective January 1, 2017, the Company early adopted Topic 606, using the full retrospective transition method. The adoption did not have any impact on the Company's financial statements as the Company has never had any revenue from contracts with customers.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. ASU 2016-02 amends a number of aspects of lease accounting, including requiring lessees to recognize almost all leases with a term greater than one year as a right-of-use asset and corresponding liability, measured at the present value of the lease payments. For public entities, this standard is effective for annual reporting periods beginning after December 31, 2018, including interim periods within that reporting period. For all other entities, this standard is effective for annual reporting periods beginning after December 15, 2019, and interim periods within annual periods beginning after December 15, 2020. While the Company is currently evaluating the impact of the adoption of this standard on its financial statements, the Company anticipates recognition of additional assets and corresponding liabilities related to leases on its balance sheets.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*. This guidance addresses specific cash flow issues with the objective of reducing the diversity in practice for the treatment of these issues. The areas identified include: debt prepayment or debt extinguishment costs; settlement of zero-coupon debt instruments; contingent consideration payments made after a business combination; proceeds from the settlement of insurance claims; proceeds from the settlement of corporate-owned life insurance policies; distributions received from equity method investees; beneficial interests in

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securitization transactions; and application of the predominance principle with respect to separately identifiable cash flows. The guidance will generally be applied retrospectively and is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those years. Early adoption is permitted. Effective January 1, 2017, the Company adopted this guidance. The adoption did not have any impact on the Company's financial statements as the Company had no applicable cash receipts or cash payments.

In November 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash*. ASU No. 2016-18 requires that a statement of cash flows explain the change during the period in the total cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning and ending balances shown on the statement of cash flows. ASU 2016-18 is effective for fiscal years beginning after December 15, 2017, and interim periods within those years, and early adoption is permitted. ASU 2016-18 must be applied retrospectively to all periods presented. Effective January 1, 2017, the Company early adopted ASU 2016-18, with all adjustments reflected as of the beginning of the fiscal years reported.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. This ASU clarifies the definition of a business when evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The guidance is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those years. Early adoption is permitted. The Company is currently evaluating the effect that this guidance will have on its financial statements.

In May 2017, the FASB issued ASU 2017-09, *Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting*, which clarifies when to account for a change to the terms or conditions of a share-based payment award as a modification. Under the new guidance, modification accounting is required only if the fair value, the vesting conditions, or the classification of the award (as equity or liability) changes as a result of the change in terms or conditions. For public entities, this standard is effective for fiscal years beginning after December 15, 2016, and interim periods within those fiscal years. Early adoption is permitted. Effective January 1, 2017, the Company early adopted this guidance using the full retrospective transition method. The adoption did not have any impact on the Company's financial statements as the Company had no changes to the terms or conditions of its share-based payment awards.

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3. Cash Equivalents and Marketable Securities

The amortized cost, unrealized gains and losses and fair values of cash equivalents and marketable securities were as follows (in thousands):

| Description | December 31, 2016, | | | Fair Value |
|---------------------------|--------------------|------------------|-------------------|-----------------|
| | Amortized Cost | Unrealized Gains | Unrealized Losses | |
| Money market funds | \$ 11,509 | \$ — | \$ — | \$ 11,509 |
| Commercial paper | 11,473 | — | (1) | 11,472 |
| Corporate debt securities | 13,627 | — | (2) | 13,625 |
| | <u>\$ 36,609</u> | <u>\$ —</u> | <u>\$ (3)</u> | <u>\$36,606</u> |
| Classified as: | | | | |
| Cash equivalents | | | | \$ 11,509 |
| Marketable securities | | | | 25,097 |
| Total | | | | <u>\$36,606</u> |

| Description | December 31, 2017 | | | Fair Value |
|---------------------------|-------------------|------------------|-------------------|-----------------|
| | Amortized Cost | Unrealized Gains | Unrealized Losses | |
| Money market funds | \$ 27,711 | \$ — | \$ — | \$ 27,711 |
| Commercial paper | 32,257 | — | (48) | 32,209 |
| Corporate debt securities | 19,930 | — | (26) | 19,904 |
| | <u>\$ 79,898</u> | <u>\$ —</u> | <u>\$ (74)</u> | <u>\$79,824</u> |
| Classified as: | | | | |
| Cash equivalents | | | | \$32,878 |
| Marketable securities | | | | 46,946 |
| Total | | | | <u>\$79,824</u> |

As of December 31, 2016 and 2017, the Company had a total of \$37.5 million and \$86.0 million in cash, cash equivalents and marketable securities, which includes \$12.4 million and \$39.0 million in cash and cash equivalents and \$25.1 million and \$46.9 million in marketable securities, respectively.

All marketable securities held as of December 31, 2017, had contractual maturities of less than one year. There have been no realized gains or losses on marketable securities for the periods presented. None of the Company's investments in marketable securities has been in an unrealized loss position for more than one year. The Company determined that it did have the ability and intent to hold all marketable securities that have been in a continuous loss position until maturity or recovery, thus there has been no recognition of any other-than-temporary impairment in the year ended December 31, 2017.

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4. Fair Value Measurements

The Company's financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used in such measurements were as follows (in thousands):

| Description | December 31, 2016 | | | |
|---------------------------|-------------------|-----------------|-----------------|-------------|
| | Total | Level 1 | Level 2 | Level 3 |
| Money market funds | \$ 11,509 | \$ 11,509 | \$ — | \$ — |
| Commercial paper | 11,472 | — | 11,472 | — |
| Corporate debt securities | 13,625 | — | 13,625 | — |
| Total | <u>\$36,606</u> | <u>\$11,509</u> | <u>\$25,097</u> | <u>\$ —</u> |

| Description | December 31, 2017 | | | |
|---------------------------|-------------------|-----------------|-----------------|-------------|
| | Total | Level 1 | Level 2 | Level 3 |
| Money market funds | \$ 27,711 | \$ 27,711 | \$ — | \$ — |
| Commercial paper | 32,209 | — | 32,209 | — |
| Corporate debt securities | 19,904 | — | 19,904 | — |
| Total | <u>\$79,824</u> | <u>\$27,711</u> | <u>\$52,113</u> | <u>\$ —</u> |

The Company measures the fair value of money market funds based on quoted prices in active markets for identical securities. Commercial paper and corporate debt securities are valued taking into consideration valuations obtained from third-party pricing services. The pricing services utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, issuer credit spreads; benchmark securities; prepayment/default projections based on historical data; and other observable inputs.

There were no transfers between Level 1 and Level 2 during the periods presented.

5. Property and Equipment, Net

Property and equipment and related accumulated depreciation and amortization are as follows (in thousands):

| | December 31, | |
|--|----------------|-----------------|
| | 2016 | 2017 |
| Computer equipment and software | \$ 197 | \$ 353 |
| Furniture and fixtures | 548 | 785 |
| Laboratory equipment | 4,623 | 10,515 |
| Leasehold improvements | 2,947 | 2,977 |
| Buildings and related improvements capitalized under a lease financing transaction | — | 15,371 |
| | 8,315 | 30,001 |
| Less accumulated depreciation and amortization | (825) | (2,790) |
| Total property and equipment, net | <u>\$7,490</u> | <u>\$27,211</u> |

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Depreciation and amortization expense was \$0.8 million and \$2.0 million for the periods ended December 31, 2016 and 2017, respectively.

6. Commitments and Contingencies

Leases

In November 2015, the Company entered into an 84-month non-cancelable operating lease, effective March 2016, for a new facility in Emeryville, California, with laboratory and office space. The lease agreement includes an escalation clause for increased rent and a renewal provision allowing the Company to extend this lease for an additional three years at the prevailing rental rate.

In February 2016, the Company entered into a 67-month non-cancellable operating lease effective October 2016 for a new facility in Cambridge, Massachusetts, with laboratory and office space. In conjunction with signing the lease, the Company paid a cash security deposit of \$0.3 million. The lease agreement includes an escalation clause for increased rent and a renewal provision allowing the Company to extend this lease for an additional three years at the prevailing rental rate. The lessor provided the Company a tenant improvement allowance for a total of \$2.1 million to complete laboratory and office renovations. The scope of these tenant improvements were considered to be "normal tenant improvements" under the lease accounting guidance. The Company recorded the tenant allowance received as leasehold improvements under the property and equipment account and deferred rent liability on the accompanying balance sheets.

In March 2017, the Company entered into a noncancelable lease (the Pleasanton Lease) to lease 42,620 square feet of office, cleanroom, and laboratory support manufacturing space in Pleasanton, California (the Pleasanton Facility). Subsequently, in April 2017, the Company took possession of the space. The Pleasanton Lease includes a free rent period, escalating rent payments and a term that expires on November 30, 2024. The Company has the option to extend the lease term for a period of five years at the then market rental rate. The Company's obligation to pay rent commenced on December 1, 2017. The Company obtained an irrevocable letter of credit in March 2017 in the initial amount of \$1.0 million as a security deposit to the Pleasanton Lease, which may be drawn down by the landlord in the event the Company fails to fully and faithfully perform all of its obligations. The letter of credit may be reduced based on certain levels of cash and cash equivalents the Company holds. As of December 31, 2017, none of the irrevocable letter of credit amount has been drawn. The Pleasanton Lease further provides that the Company is obligated to pay to the landlord its proportionate share of certain basic operating costs, including taxes and operating expenses.

In connection with the Pleasanton Lease, the Company received a tenant improvement allowance of \$1.2 million from the landlord for the costs associated with the design, development and construction of tenant improvements for the Pleasanton Facility building. The scope of the tenant improvements did not qualify under the lease accounting guidance as "normal tenant improvements" and the Company was deemed owner of the leased building during the construction period for accounting purposes. The Company has therefore capitalized the \$9.3 million fair value of the leased building within property and equipment, net, and recognized a corresponding non-current lease financing obligation in the balance sheet as of December 31, 2017. The fair value of the leased building was estimated using a market approach that utilized comparable observable sales for similar assets (Level 2 inputs). The Company has also recognized building improvements totaling \$6.1 million for additions to the leased building incurred by the Company during the construction period, of which \$1.2 million were due but had not yet

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been received from the landlord as of December 31, 2017 and were recorded as an increase to the lease financing obligation and prepaid and other current assets on the balance sheet. Such amounts were subsequently reimbursed by the landlord in April 2018. In November 2017, construction on the Pleasanton Facility was substantially completed and the leased property was placed into service. The Company determined the completed construction project did not qualify for sale-leaseback accounting due to the collateral held by the landlord in the form of a letter of credit and instead has been accounted for as a financing lease transaction. The leased building for the Pleasanton Facility and related improvements remain on the Company's balance sheet as of December 31, 2017 and rental payments associated with the Pleasanton Lease have been allocated to operating lease expense for the ground underlying the leased building and principal and interest payments on the lease financing obligation.

From March 2017 through December 31, 2017, the Company recorded rent expense associated with the ground lease of approximately \$78,000 in the statements of operations and comprehensive loss. Total interest, which represents the cost of the lease financing obligation under the Pleasanton Lease agreement, was approximately \$64,000 for the year ended December 31, 2017, which was recognized within the statement of operations and comprehensive loss. The allocation of the Pleasanton Lease payment to ground lease rent expense and principal and interest expense on the lease financing obligation was estimated using income and market approaches that utilized comparable observable sales for similar assets, land capitalization rates and an estimate of the Company's incremental borrowing rate (Level 2 and Level 3 inputs).

As of December 31, 2017, minimum annual payments under the Company's non-cancelable lease agreements and lease financing obligation are as follows (in thousands):

| | <u>Lease Financing Obligation</u> | <u>Operating Lease</u> |
|--|---------------------------------------|----------------------------|
| Year ending December 31: | | |
| 2018 | \$ 708 | \$ 1,642 |
| 2019 | 794 | 1,700 |
| 2020 | 818 | 1,751 |
| 2021 | 843 | 1,803 |
| 2022 | 868 | 1,118 |
| Thereafter | <u>1,737</u> | <u>396</u> |
| Total minimum payments | 5,768 | <u>\$ 8,410</u> |
| Less: Amount representing interest expense | <u>(5,137)</u> | |
| | 631 | |
| Residual value of lease financing obligation | <u>9,896</u> | |
| | 10,527 | |
| Less: Lease financing obligation, short-term | <u>(6)</u> | |
| Lease financing obligation, long-term | <u>\$ 10,521</u> | |

Rent expense was \$2.4 million and \$1.2 million for the years ended December 31, 2016 and 2017, respectively.

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Agreement with CRO

In September 2017, the Company entered into a contract research and development agreement with a third party contract research organization (CRO) to provide research, analysis and antibody samples to further the Company's development of personalized immunotherapies in the treatment of cancer. Under the agreement, the Company paid an upfront payment of \$0.5 million to the CRO. The upfront payment has been capitalized and will be recognized as research and development expense using the straight-line method over the term of the agreement, which is one year. The Company is also obligated to pay up to \$0.4 million to the CRO upon the completion of certain phases of the research services. These costs will be recorded to research and development expense over the expected period of each phase of the research services. The Company is also obligated to pay the CRO certain milestone payments of up to \$36.4 million on achievement of specified events. None of these events had occurred as of December 31, 2017. During 2017, the Company recognized a total of \$0.1 million of research and development expense under the agreement.

Guarantees and Indemnifications

The Company, as permitted under Delaware law and in accordance with its certification of incorporation and bylaws, and pursuant to indemnification agreements with certain of its officers and directors, indemnifies its officers and directors for certain events or occurrences, subject to certain limits, which the officer or director is or was serving at the Company's request in such capacity. The term of the indemnification period lasts as long as an officer or director may be subject to any proceeding arising out of acts or omissions of such officer or director in such capacity. The maximum amount of potential future indemnification is unlimited; however, the Company currently holds director and officer liability insurance. This insurance limits the Company's exposure and may enable it to recover a portion of any future amounts paid. The Company believes that the fair value of these indemnification obligations is minimal. Accordingly, the Company has not recognized any liabilities relating to these obligations for any period presented.

7. License Agreements
Arbutus Biopharma Corporation

In October 2017, the Company entered into an Exclusive License Agreement with Arbutus Biopharma Corporation (Arbutus). Under the license agreement, the Company has a worldwide, exclusive license to certain technology of Arbutus, including Arbutus' portfolio of proprietary and clinically validated lipid nanoparticle products and associated intellectual property, as well as technology transfer of Arbutus' manufacturing know-how. Under this license agreement, the Company paid an upfront payment of \$5.0 million which was included in research and development expenses during 2017. The Company also reimbursed Arbutus for materials and personnel costs totaling \$0.2 million, which were included in research and development expenses during 2017. The Company is obligated to pay Arbutus for services rendered and certain milestone payments up to an aggregate of \$123.5 million on achievement of specified events, and low single-digit royalties on sales of its licensed products. None of these events had occurred as of December 31, 2017 and no royalties were due from the sale of licensed products.

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Non-Profit Hospital Cancer Center

In January 2016, the Company entered into an Exclusive License Agreement with a non-profit hospital cancer center. Under the license agreement, the Company has an exclusive license to utilize certain patents and know-how relating to immunotherapy for an insignificant upfront payment, cash milestone payments on achievement of specified events, and a low single digit royalty on sales of licensed products. The achievement of the milestones and payment of royalties is dependent upon obtaining regulatory approval. None of these events had occurred as of December 31, 2016 or 2017 and no royalties were due from the sales of licensed products. The Company also issued a ten-year warrant to the cancer center for the right to purchase 277,778 shares of its common stock at \$0.05 per share. The estimated fair value of the warrant was not significant and was included in research and development expense and additional paid-in capital. The warrant was exercised in full in January 2018.

8. Balance Sheet Components

Prepaid Expenses and Other Assets

Prepaid expenses and other current assets consist of the following (in thousands):

| | December 31, | |
|---|---------------------|-----------------|
| | 2016 | 2017 |
| Receivable from landlord | \$ — | \$ 1,226 |
| Prepaid rent | 355 | 93 |
| Interest receivable and other receivables | 171 | 484 |
| Prepaid research and development-related expenses | 244 | 628 |
| Other | 114 | 95 |
| Total prepaid expenses and other current assets | <u>\$ 884</u> | <u>\$ 2,526</u> |

Accrued Liabilities

Accrued current liabilities consist of the following (in thousands):

| | December 31, | |
|---|---------------------|-----------------|
| | 2016 | 2017 |
| Deferred rent | \$ 336 | \$ 381 |
| Research and development-related expenses | 164 | 683 |
| Other | 195 | 426 |
| Total accrued current liabilities | <u>\$ 695</u> | <u>\$ 1,490</u> |

9. Convertible Preferred Stock and Common Stock

Convertible Preferred Stock

Series A Equity Financing

The Company entered into a Series A preferred stock purchase agreement (Series A Preferred Stock Purchase Agreement), with certain investors on September 18, 2015, and upon approval by the Company's Board of Directors, the Company completed a Series A convertible preferred stock

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financing (Series A—First Tranche) at a price per share of \$1.00. The net cash proceeds from this round of financing totaled \$25.4 million, and 25,525,000 shares of Series A convertible preferred stock were issued. Issuance costs totaled \$0.1 million and were recorded as a reduction of the proceeds.

On April 1, 2016, and upon approval by the Company's Board of Directors, the Company completed a Series A convertible preferred stock financing (Series A—Second Tranche) at a price per share of \$1.00. The net cash proceeds from this round of financing totaled \$35.7 million, and 35,735,000 shares of Series A convertible preferred stock were issued. Issuance costs totaled \$0.02 million and were recorded as a reduction of the proceeds.

Upon approval by the Company's Board of Directors and a majority of the holders of the Series A convertible preferred stock, the Company could proceed with the third closing of the Series A convertible preferred stock for a total of 40,840,000 shares at a purchase price of \$1.00 per share (Series A—Third Tranche). However, for a period of 90 days following such approval, the Company may solicit alternative financing at financially superior terms to those of the Series A—Third Tranche, including a purchase price greater than \$1.00 per share (the Superior Financing Transaction). If approved by the Board of Directors, the Company's obligation to complete the Series A—Third Tranche shall terminate and the Superior Financing Transaction would proceed. Each Series A convertible preferred stockholder will have the right to purchase at least 50% of its original Series A—Third Tranche amount in the Superior Financing Transaction. The Series A—Second Tranche and Series A—Third Tranche rights are considered to be mutual options as neither the purchasers nor the Company have a commitment or obligation to purchase or sell additional shares. As such, these rights are not accounted for separately. In connection with the Company's Series B Equity Financing the Company's Board of Directors and investors terminated the ability to complete the Series A—Third Tranche.

Series B Equity Financing

The Company entered into a Series B preferred stock purchase agreement (Series B Preferred Stock Purchase Agreement), with certain investors on September 6, 2017 and October 20, 2017, and upon approval by the Company's Board of Directors, the Company completed a Series B convertible preferred stock financing (Series B) at a price per share of \$1.56. The net cash proceeds totaled \$95.8 million and 61,543,319 shares of Series B convertible preferred stock were issued. Issuance costs totaled \$0.2 million and were recorded as a reduction of the proceeds.

The preferred stock has various features, including convertibility and non-cumulative dividends. The Company determined that none of the features required bifurcation from the underlying shares, either because they are clearly and closely related to the underlying shares or because they do not meet the definition of a derivative. The Series A and Series B convertible preferred stock are considered permanent equity and have not been accreted up to their redemption value. The Second and Third Tranche rights are considered to be mutual options as neither the purchasers nor the Company have a commitment or obligation to purchase or sell additional shares. As such, these rights are not accounted for separately. Moreover, in any such redemption (i.e. deemed liquidation) all equity holders (common and preferred) will receive the same form of consideration. The preferred stockholders cannot contractually redeem their shares, or redeem their shares through separate negotiation, without the Company's common stockholders being able to also redeem their shares for the same form of consideration.

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At December 31, 2016, convertible preferred stock consisted of the following (in thousands, except share and per share amounts):

| | <u>Shares Authorized</u> | <u>Shares Issued and Outstanding</u> | <u>Issuance Price Per Share</u> | <u>Carrying Value</u> | <u>Liquidation Preference</u> |
|-----------------------------------|------------------------------|--|---|---------------------------|-----------------------------------|
| Series A—First Tranche | 110,000,000 | 25,525,000 | \$ 1.00 | \$25,425 | \$ 25,525 |
| Series A—Second Tranche | — | 35,735,000 | \$ 1.00 | 35,714 | 35,735 |
| Total convertible preferred stock | <u>110,000,000</u> | <u>61,260,000</u> | | <u>\$61,139</u> | <u>\$ 61,260</u> |

At December 31, 2017, convertible preferred stock consisted of the following (in thousands, except share and per share amounts):

| | <u>Shares Authorized</u> | <u>Shares Issued and Outstanding</u> | <u>Issuance Price Per Share</u> | <u>Carrying Value</u> | <u>Liquidation Preference</u> |
|-----------------------------------|------------------------------|--|---|---------------------------|-----------------------------------|
| Series B | 64,102,551 | 61,543,319 | \$ 1.56 | \$ 95,798 | \$ 96,008 |
| Series A—First Tranche | 110,000,000 | 25,525,000 | \$ 1.00 | 25,425 | 25,525 |
| Series A—Second Tranche | — | 35,735,000 | \$ 1.00 | 35,714 | 35,735 |
| Total convertible preferred stock | <u>174,102,551</u> | <u>122,803,319</u> | | <u>\$ 156,937</u> | <u>\$ 157,268</u> |

The rights, preferences, and privileges of the convertible preferred stock are as follows:

Redemption Rights

The preferred stock is not redeemable by holders unless a redemption event occurs. A redemption event will only occur upon the liquidation or winding up of the Company, a greater than 50% change in control, or the sale of substantially all of the assets of the Company. Management has also elected not to adjust the carrying values of the Series A and Series B convertible preferred stock to the redemption value of such shares, since it is uncertain whether or when a redemption event will occur. Subsequent adjustments to increase the carrying value to the redemption values will be made when it becomes probable that such a redemption will occur.

Dividends Rights

The holders of Series A and Series B convertible preferred stock are entitled to receive dividends, from any assets legally available, prior and in preference to any declaration or payment of any dividend to the common stockholders, at the rate of 8% of the original issue price (as determined on a per annum basis and on an as-converted basis). Such dividends are payable if and when declared by the Board of Directors and are not cumulative. After payment of such dividends, any additional dividends shall be distributed among the holders of the Series A and Series B convertible preferred stock and common stock pro rata based on the number of shares of common stock then held by each holder (assuming conversion of all such preferred stock into common stock). As of December 31, 2016 and 2017, no such dividends had been declared or accrued.

Liquidation Rights

In the event of any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary (Liquidation Event), the holders of Series B convertible preferred stock are entitled to

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receive, prior and in preference to any distribution of any of the assets of the Company to the holders of the Series A convertible preferred stock, \$1.56 per share (as adjusted for any stock splits, combinations, reorganizations, or similar transactions, plus any declared and unpaid dividends). After payment of the above, the holders of Series A convertible preferred stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of common stock, \$1.00 per share (as adjusted for any stock splits, combinations, reorganizations, or similar transactions, plus any declared and unpaid dividends).

If, upon the occurrence of such an event, the proceeds to be distributed are insufficient to permit the payment to such holders of the full preferential amounts, then the entire amount legally available for distribution shall be distributed among the holders of the Series A and Series B preferred stock in proportion to the full preferential amount that each such holder is otherwise entitled to receive had such proceeds been available.

After liquidation preference payments have been made to the holders of the convertible preferred stock as described above, all of the remaining assets and funds of the Company are to be distributed ratably among the holders of the preferred and common stock, as if the preferred stock had been converted to common stock. However, Series B holders are limited to the greater of (1) \$7.80 per share (as adjusted for any stock splits, combinations, reorganizations or similar transactions) and (2) the amount the holder would have received if all shares of Series B convertible preferred stock had been converted to common stock prior to such liquidation, dissolution, or winding up of the Company. Series A holders are limited to the greater of (1) \$5.00 per share (as adjusted for any stock splits, combinations, reorganizations or similar transactions) and (2) the amount the holder would have received if all shares of Series A convertible preferred stock had been converted to common stock prior to such liquidation, dissolution, or winding up of the Company.

Voting Rights

Except as otherwise required by law, the holders of common and Series A and Series B convertible preferred stock vote together as a single class. The holders of the convertible preferred stock are entitled to the number of votes equal to the number of shares of common stock into which the convertible preferred stock could be converted on the record date for the vote, or upon the written consent of the stockholders.

The holders of the Series A convertible preferred stock are entitled to elect three directors of the Company, the holders of the Series B convertible preferred stock are entitled to elect one director of the Company, and the holders of common stock shall be entitled to elect one director of the Company.

Conversion Rights

Each share of Series A and Series B convertible preferred stock, at the option of the holder and at any time after the date of issuance, is convertible into the number of shares of common stock determined by dividing the respective original issue price by the conversion price (the Conversion Price). At December 31, 2017, the Series A and Series B Conversion Prices are \$1.00 and \$1.56, respectively, and are subject to certain future adjustments.

Conversion occurs at the conversion rate (i) upon the closing of the sale of common stock at a price of at least \$3.12 per share, in a firm commitment underwritten public offering pursuant to an

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Notes to Financial Statements**

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effective registration statement under the Securities Act of 1933, as amended, resulting in at least \$50.0 million of net proceeds, or (ii) at the election of (a) the holders of at least a majority of the then-outstanding shares of such Series A preferred stock and (b) the holders of at least a majority of the then-outstanding shares of such Series B preferred stock. Through December 31, 2017, the Company has sufficient authorized and unissued common shares available to settle any conversion event.

Common Stock

The Company is authorized to issue 160,000,000 shares of common stock. Holders of common stock are generally entitled to one vote per share on all matters to be voted upon by the stockholders of the Company.

Subject to the preferences that may be applicable to any outstanding shares of preferred stock, the holders of common stock are entitled to receive ratably such dividends, if any, as may be declared by the Board of Directors. No dividends have been declared to date.

10. Stock-Based Compensation

2015 Equity Incentive Plan

In August 2015, the Board of Directors approved the 2015 Equity Incentive Plan (the Plan). Under the Plan, 20,833,332 shares of common stock have been reserved for the issuance of ISOs, NSOs, stock bonuses, and rights to acquire restricted stock to employees, officers, directors, and consultants of the Company as of December 31, 2017. The Plan allows for the issuance of non-statutory and incentive stock options (ISOs) to employees and non-statutory stock options (NSOs) to non-employees. ISOs and NSOs may be granted with exercise prices at no less than 100% of the fair value of the common stock on the date of grant. Options granted to a 10% stockholder shall be at no less than 110% of the fair value, and ISO stock option grants to such 10% stockholders expire five years from the date of grant. For stock awards granted during 2016 and 2017, deemed fair values of \$0.32 and \$0.46 per common share were used in calculating stock based compensation expense, as determined by management using hindsight.

The Company permits early exercise of certain stock options prior to vesting to certain directors, officers, and employees. Any shares issued pursuant to unvested options are restricted and subject to repurchase by the Company until the conditions for vesting are met. The amounts paid for shares purchased under an early exercise of stock options and subject to repurchase by the Company are reported as a liability, then in stockholders' equity once those shares vest. Upon termination of employment of an option holder, the Company has the right to repurchase, at the original purchase price, any unvested options. The shares issued pursuant to unvested options have not been included in shares issued and outstanding on the balance sheet and statement of stockholders' equity as such shares are not considered outstanding for accounting purposes.

ISOs granted under the Plan generally vest 25% after the completion of 12 months of service, and the balance vests in equal monthly installments over the next 36 months of service and expires 10 years from the grant date, unless subject to provisions regarding 10% stockholders. NSOs vest per the specific agreement and expire 10 years from the date of grant.

The grant date fair value of the Company's common stock has been determined by the Company's Board of Directors with the assistance of management and an independent third-party valuation

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specialist. The grant date fair value of the Company's common stock was determined using valuation methodologies which utilizes certain assumptions including probability weighting of events, volatility, time to liquidation, a risk-free interest rate and an assumption for a discount for lack of marketability (Level 3 inputs). In determining the fair value of the Company's common stock, the methodologies used to estimate the enterprise value of the Company were performed using methodologies, approaches, and assumptions consistent with the American Institute of Certified Public Accountants Accounting and Valuation Guide, Valuation of Privately-Held-Company Equity Securities Issued as Compensation ("AICPA Accounting and Valuation Guide").

Valuation of Stock Options

The fair value of each stock option granted to an employee or a director was estimated as of the date of grant using the Black-Scholes model with the following weighted-average assumptions:

| | Year Ended December 31, | |
|-------------------------|-------------------------|------------|
| | 2016 | 2017 |
| Expected dividend yield | — | — |
| Expected term | 6.05 years | 6.04 years |
| Risk-free interest rate | 1.43% | 1.97% |
| Expected volatility | 103% | 94% |

Management's calculations are based on a grant date valuation approach. Using the Black-Scholes model, the weighted-average grant-date fair value of employee stock options granted was \$0.32 and \$0.29 per share during the years ended December 31, 2016 and 2017, respectively.

Stock Option Activity

A summary of the stock plan activity is as follows:

| | Options Available for Grant | Outstanding Options | Weighted Average Exercise Price |
|-------------------------------|-----------------------------------|------------------------|---------------------------------------|
| Balances at December 31, 2015 | 14,280,115 | 1,793,250 | \$ 0.05 |
| Granted | (6,607,500) | 6,607,500 | 0.05 |
| Exercised | — | (4,717,250) | 0.05 |
| Forfeited | 170,000 | (170,000) | 0.05 |
| Repurchased | 80,000 | — | — |
| Balances at December 31, 2016 | 7,922,615 | 3,513,500 | 0.06 |
| Reserved | 2,500,000 | — | — |
| Granted | (6,212,050) | 6,212,050 | 0.16 |
| Exercised | — | (287,500) | 0.05 |
| Forfeited | 110,000 | (110,000) | 0.07 |
| Balances at December 31, 2017 | <u>4,320,565</u> | <u>9,328,050</u> | |

For the years ended December 31, 2016 and 2017, the total intrinsic value of stock option awards exercised was \$1.3 million and \$0.08 million, respectively, determined at the date of option exercise, and the total cash received upon exercise of stock options was \$0.2 million and \$0.01 million,

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respectively. The total intrinsic value of options exercisable was \$0.5 million as of December 31, 2017. The aggregate intrinsic value was calculated as the difference between the exercise prices of the underlying stock option awards and the estimated fair value of the common stock on the date of exercise.

Additional information related to the status of options at December 31, 2016, is as follows:

| | <u>Options</u> | <u>Weighted Average Exercise Price per Share</u> | <u>Weighted- average Remaining Contractual Life (Years)</u> |
|-----------------------------|----------------|--|---|
| Outstanding | 3,513,500 | \$ 0.06 | 9.63 |
| Exercisable | 497,000 | 0.05 | 9.26 |
| Vested and expected to vest | 8,294,915 | 0.05 | 9.28 |

Additional information related to the status of options at December 31, 2017, is as follows:

| | <u>Options</u> | <u>Weighted Average Exercise Price per Share</u> | <u>Weighted- Average Remaining Contractual Life (Years)</u> | <u>Aggregate Intrinsic Value (in thousands)</u> |
|-----------------------------|----------------|--|---|---|
| Outstanding | 9,328,050 | \$ 0.13 | 9.13 | \$ 3,087 |
| Exercisable | 1,205,931 | 0.06 | 8.59 | 486 |
| Vested and expected to vest | 11,633,110 | 0.11 | 8.83 | 4,113 |

As of December 31, 2016 and 2017, \$2.3 million and \$2.9 million of total unrecognized compensation cost related to non-vested employee and consultant options is expected to be recognized over a weighted-average period of 3.24 and 2.75 years, respectively. The total fair value of shares vested during the period ended December 31, 2016 and 2017 was \$0.4 million and \$1.1 million, respectively.

During the years ended December 31, 2016 and 2017, NSOs were issued to non-employees to purchase 20,000 and 180,000 shares of common stock for current and future services at weighted-average exercise prices of \$0.11 and \$0.11 per share, respectively. The options were valued using the Black-Scholes model based on the following assumptions: expected term of 9.11 years, risk-free interest rate of 2.25%, volatility of 100%, and no dividend yield. The fair value of these options is expensed over the vesting period. Compensation expense for these awards has not been material for any period presented.

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Stock-Based Compensation Expense

Total stock-based compensation for all options granted to employees and consultants, before taxes is as follows (in thousands):

| | Year Ended December 31, | |
|-------------------------------------|-------------------------|-----------------|
| | 2016 | 2017 |
| Research and development expenses | \$ 385 | \$ 888 |
| General and administrative expenses | 212 | 238 |
| Total | <u>\$ 597</u> | <u>\$ 1,126</u> |

Liability for Early Exercise of Stock Options

As of December 31, 2016 and 2017, there were 5,784,723 and 3,721,127, respectively, unvested common shares outstanding that were issued upon the early exercise of stock options prior to the vesting of the underlying shares which are subject to repurchase by the Company at the original issuance price upon termination of the stockholders' services. The right to repurchase these shares generally lapses with respect to 25% of the shares underlying the option after one year of service to the Company and 1/48 of the shares underlying the original grant per month for 36 months thereafter. The shares purchased by the employees pursuant to the early exercise of stock options are not deemed, for accounting purposes, to be issued until those shares vest. As of December 31, 2016 and 2017, the Company recorded \$0.3 million and \$0.2 million, respectively, as short-term and long-term liabilities associated with shares issued subject to repurchase rights.

11. Income Taxes

The reconciliation of the statutory federal income tax rate to the Company's effective tax rate is as follows:

| | Year Ended December 31, | |
|--------------------------------------|-------------------------|------------|
| | 2016 | 2017 |
| Tax at statutory federal rate | 34.00% | 34.00% |
| State tax, net of federal benefit | 3.34 | 2.22 |
| Permanent differences | (0.81) | (2.34) |
| Change in valuation allowance | (37.32) | (20.70) |
| Tax reform | — | (17.34) |
| Research and development tax credits | 0.79 | 4.16 |
| Effective income tax rate | <u>— %</u> | <u>— %</u> |

The Company uses the liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and the tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The Company assesses the likelihood that the resulting deferred tax assets will be realized. A valuation allowance is provided when it is more likely than not that some portion or all of a deferred tax asset will not be realized.

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In assessing the realizability of deferred tax assets, the Company 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 the temporary differences representing net future deductible amounts become deductible. Due to the Company's history of losses, and lack of other positive evidence, the Company has determined that it is more likely than not that its net deferred tax assets will not be realized, and therefore, the net deferred tax assets are fully offset by a valuation allowance at December 31, 2016 and 2017. The deferred tax assets were primarily comprised of federal and state tax net operating losses and tax credit carryforwards. The valuation allowance increased by \$7.0 million during 2016 and increased by \$8.5 million during 2017.

The U.S. Tax Cuts and Jobs Act (Tax Act) was enacted on December 22, 2017 and introduces significant changes to U.S. income tax law. Effective in 2018, the Tax Act reduces the U.S. federal statutory corporate tax rate from 35% to 21% for years after 2017. Accordingly, the Company has remeasured its deferred taxes as of December 31, 2017 to reflect the reduced rate that will apply in future periods when these deferred taxes are settled or realized. The Company recognized a reduction to the deferred tax assets of \$7.1 million to reflect the reduced U.S. tax rate of the Tax Act, which was off-set by a corresponding reduction in the valuation allowance.

SAB 118 addresses the application of GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Act and allows the registrant to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. The Company has recognized a net tax benefit of \$7.1 million offset by an equal amount to the valuation allowance for the provisional tax impacts related to the revaluation of deferred tax balances and included this estimate in its financial statements for the year ended December 31, 2017. The Company is in the process of analyzing the impact of the various provisions of the Tax Act. The ultimate impact may differ from the provisional amounts recorded. The Company expects to complete its analysis within the measurement period in accordance with SAB 118.

The components of the net deferred tax assets/liabilities are as follows (in thousands):

| | December 31, | |
|--------------------------------------|--------------|-----------|
| | 2016 | 2017 |
| Deferred tax assets: | | |
| Net operating loss carryforwards | \$ 6,852 | \$ 12,251 |
| Research and development tax credits | 156 | 1,990 |
| Lease financing obligation | — | 2,490 |
| Accruals and other | 1,342 | 1,124 |
| Amortization | 152 | 1,222 |
| Deferred tax liabilities: | | |
| Other depreciation | (950) | (536) |
| Leased building depreciation | — | (2,475) |
| Total deferred tax assets | 7,552 | 16,066 |
| Less valuation allowance | (7,552) | (16,066) |
| Net deferred tax assets | \$ — | \$ — |

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At December 31, 2017, the Company's federal and state income tax net operating loss carryforwards were approximately \$49.9 million and \$25.8 million, respectively, which may be subject to limitations as described below. If not utilized, the federal tax loss carryforwards will begin to expire in 2035 and the state tax loss carryforwards will begin to expire in 2035. Under the newly enacted federal income tax law, federal net operating losses incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal net operating losses is limited. It is uncertain if and to what extent various states will conform to the newly enacted federal income tax law. In addition, the Company has federal and certain California and Massachusetts research and development income tax credit carryforwards of \$1.9 million, \$1.0 million and \$0.4 million, respectively. If not utilized, the federal research and development income tax credit carryforwards will begin to expire in 2035. The California research and development income tax credit carryforwards do not expire and can be carried forward indefinitely. The Massachusetts research and development income tax credit carryforwards will begin to expire in 2030. Due to the net operating loss carryforwards, all years remain open for income tax examination by tax authorities in the United States, various states and foreign tax jurisdictions in which the Company files tax returns.

The net operating loss (NOL) and tax credit carryforwards are subject to review and possible adjustment by the Internal Revenue Service and state tax authorities and may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest of significant stockholders over a three-year period in excess of 50%, as defined under Sections 382 and 383 of the Internal Revenue Code of 1986. This could limit the amount of tax attributes that can be utilized annually to offset future taxable income or tax liabilities. Subsequent ownership changes may further affect the limitation in future years. The Company is in the process of completing an analysis through December 31, 2017 under Internal Revenue Service Code (IRC) Sections 382 and 383 to determine if the Company's net operating loss carryforwards and research and development credits are limited due to a change in ownership. The Company does not believe it has experienced an ownership change pursuant to Section 382, and as a result, does not expect to reduce its federal net operating loss or research and development credit carryforwards.

The following table summarizes the activity related to the Company's unrecognized tax benefits (in thousands):

| | December 31, | |
|---|---------------------|-----------------|
| | 2016 | 2017 |
| Beginning of year—unrecognized tax benefits | \$ 7 | \$ 230 |
| Decrease for tax positions taken during prior periods | — | (47) |
| Increases for tax positions taken during current period | 223 | 906 |
| End of year—unrecognized tax benefits | <u>\$ 230</u> | <u>\$ 1,089</u> |

The Company does not expect any material changes to the estimated amount of liability associated with its uncertain tax positions within the next 12 months.

The Company files income tax returns in the U.S. federal jurisdiction and various state jurisdictions. The Company is not currently under audit by the Internal Revenue Service or other similar state or local authorities. All tax years of the Company remain open to examination by major taxing jurisdictions to which the Company is subject.

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12. Net Loss and Unaudited Pro Forma Net Loss Per Share

The following table sets forth the computation of the basic and diluted net loss per share (in thousands, except for per share amounts):

| | Year Ended December 31, | |
|---|-------------------------|------------------|
| | 2016 | 2017 |
| Numerator: | | |
| Net loss | \$ (18,750) | \$ (41,377) |
| Denominator: | | |
| Weighted-average common shares outstanding, basic and diluted | 11,540,581 | 13,793,417 |
| Net loss per share, basic and diluted | <u>\$ (1.62)</u> | <u>\$ (3.00)</u> |

Since the Company was in a loss position for all periods presented, basic net loss per share is the same as diluted net loss per share for all periods as the inclusion of all potential common shares outstanding would have been anti-dilutive. Potentially dilutive securities that were not included in the diluted per share calculations because they would be anti-dilutive were as follows:

| | December 31, | |
|--|-------------------|--------------------|
| | 2016 | 2017 |
| Series A—First Tranche convertible preferred stock | 25,525,000 | 25,525,000 |
| Series A—Second Tranche convertible preferred stock | 35,735,000 | 35,735,000 |
| Series B convertible preferred stock | — | 61,543,319 |
| Options issued and outstanding | 3,513,500 | 9,328,050 |
| Early exercised common stock subject to future vesting | 5,784,721 | 3,721,105 |
| Warrants to purchase common stock | 277,778 | 277,778 |
| Total | <u>70,835,999</u> | <u>136,130,252</u> |

Unaudited Pro Forma Net Loss Per Share

The following table sets forth the computation of the Company's unaudited pro forma basic and diluted net loss per share (in thousands, except share and per share amounts):

| | Year ended December 31, 2017 |
|--|------------------------------------|
| Net loss | <u>\$ (41,377)</u> |
| Shares used in computing net loss per share, basic and diluted | 13,793,417 |
| Pro forma adjustment to reflect assumed conversion of preferred stock | <u>80,736,443</u> |
| Shares used to compute pro forma net loss per share, basic and diluted | 94,529,860 |
| Pro forma net loss per share, basic and diluted | <u>\$ (0.44)</u> |

13. Related-Party Transactions

During the year ended December 31, 2016, the Company issued 29,230,250 shares of Series A convertible preferred stock for total proceeds of \$29.2 million to certain stockholders, a member of the

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Company's Board of Directors and immediate family members of certain executive officers of the Company, that are in each case considered to be related parties. During the year ended December 31, 2017, the Company issued 17,666,407 additional shares of Series B convertible preferred stock for total proceeds of \$27.6 million to these related parties.

14. Defined Contribution Plan

The Company began sponsoring a 401(k) Plan in 2017 that stipulates that eligible employees can elect to contribute to the 401(k) Plan, subject to certain limitations, on a pretax basis. The Company matches up to 50% of the first 4% of each employee's contribution. During the year ended December 31, 2017, expenses recognized for the 401(k) Plan were insignificant.

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Condensed Balance Sheets
(In thousands, except share amounts)

| | December 31, 2017 | June 30, 2018 (Unaudited) | Pro Forma Stockholders' Equity as of June 30, 2018 (Unaudited) |
|--|----------------------|---------------------------------|---|
| Assets | | | |
| Current assets: | | | |
| Cash and cash equivalents | \$ 39,007 | \$ 37,541 | |
| Marketable securities | 46,946 | 26,949 | |
| Prepaid expenses and other current assets | 2,526 | 2,392 | |
| Total current assets | 88,479 | 66,882 | |
| Property and equipment, net | 27,211 | 27,533 | |
| Deposits and other long-term assets | 1,610 | 1,536 | |
| Total assets | \$ 117,300 | \$ 95,951 | |
| Liabilities and stockholders' equity | | | |
| Current liabilities: | | | |
| Accounts payable | \$ 3,935 | \$ 2,671 | |
| Accrued compensation | 2,227 | 1,793 | |
| Accrued liabilities | 1,490 | 721 | |
| Total current liabilities | 7,652 | 5,185 | |
| Deferred rent, net of current portion | 1,749 | 1,543 | |
| Other non-current liabilities | 96 | 43 | |
| Lease financing obligation, net of current portion | 10,521 | 10,508 | |
| Total liabilities | 20,018 | 17,279 | |
| Commitments and contingencies (Note 6) | | | |
| Stockholders' equity: | | | |
| Convertible preferred stock, \$0.001 par value; 125,362,551 and 139,228,319 shares authorized at December 31, 2017 and June 30, 2018 (unaudited), respectively; 122,803,319 and 127,565,223 shares issued and outstanding at December 31, 2017 and June 30, 2018 (unaudited), respectively; aggregate liquidation preference of \$157,268 and \$166,268 at December 31, 2017 and June 30, 2018 (unaudited), respectively; no shares issued and outstanding pro forma (unaudited) | 156,937 | 165,865 | \$ — |
| Common stock, \$0.0001 par value; 160,000,000 and 175,250,000 shares authorized at December 31, 2017 and June 30, 2018 (unaudited), respectively; 14,852,480 and 16,619,601 shares issued and outstanding at December 31, 2017 and June 30, 2018 (unaudited), respectively; 144,154,824 shares issued and outstanding, pro forma (unaudited) | 1 | 2 | 14 |
| Additional paid-in capital | 2,045 | 3,311 | 169,164 |
| Accumulated other comprehensive loss | (74) | (31) | (31) |
| Accumulated deficit | (61,627) | (90,475) | (90,475) |
| Total stockholders' equity | 97,282 | 78,672 | \$ 78,672 |
| Total liabilities and stockholders' equity | \$ 117,300 | \$ 95,951 | |

See accompanying notes to condensed financial statements.

Gritstone Oncology, Inc.
Condensed Statements of Operations and Comprehensive Loss
(Unaudited)

(In thousands, except share and per share amounts)

| | Six Months Ended June 30, | |
|---|---------------------------|-------------|
| | 2017 | 2018 |
| Operating expenses: | | |
| Research and development | \$ 11,855 | \$ 24,090 |
| General and administrative | 2,840 | 4,852 |
| Total operating expenses | 14,695 | 28,942 |
| Loss from operations | (14,695) | (28,942) |
| Interest income, net | 138 | 94 |
| Net loss | (14,557) | (28,848) |
| Other comprehensive loss: | | |
| Unrealized loss on marketable securities, net of tax | (2) | (31) |
| Comprehensive loss | \$ (14,559) | \$ (28,879) |
| Net loss per share, basic and diluted | \$ (1.11) | \$ (1.83) |
| Weighted average number of shares used in computing net loss per share, basic and diluted | 13,156,419 | 15,772,769 |
| Pro forma net loss per share, basic and diluted | | \$ (0.21) |
| Weighted average number of shares used in computing pro forma net loss per share, basic and diluted | | 138,628,706 |

See accompanying notes to condensed financial statements.

Gritstone Oncology, Inc.
Condensed Statements of Cash Flows
(Unaudited)
(In thousands)

| | Six Months Ended June 30, | |
|---|----------------------------------|------------------|
| | 2017 | 2018 |
| Operating activities | | |
| Net loss | \$ (14,557) | \$ (28,848) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | |
| Depreciation | 846 | 1,882 |
| Net amortization of premiums and discounts on marketable securities | (46) | (180) |
| Stock-based compensation | 506 | 1,173 |
| Changes in operating assets and liabilities: | | |
| Prepaid expenses and other current assets | (218) | 415 |
| Deposits and other long term assets | 172 | 74 |
| Accounts payable | 122 | (177) |
| Accrued compensation | 108 | (434) |
| Accrued and other non-current liabilities | 144 | (765) |
| Deferred rent | (115) | (206) |
| Net cash used in operating activities | <u>(13,038)</u> | <u>(27,066)</u> |
| Investing activities | | |
| Purchase of marketable securities | (16,302) | — |
| Maturities of marketable securities | 26,867 | 20,220 |
| Purchase of property and equipment | (3,695) | (2,857) |
| Net cash provided by investing activities | <u>6,870</u> | <u>17,363</u> |
| Financing activities | | |
| Proceeds from issuance of common stock under equity incentive plan | 14 | 24 |
| Payments of deferred IPO costs | — | (779) |
| Proceeds from issuance of convertible preferred stock, net of issuance costs | — | 8,992 |
| Net cash provided by financing activities | <u>14</u> | <u>8,237</u> |
| Net decrease in cash, cash equivalents and restricted cash | (6,154) | (1,466) |
| Cash, cash equivalents and restricted cash at beginning of period | 12,410 | 39,999 |
| Cash, cash equivalents and restricted cash at end of period | <u>\$ 6,256</u> | <u>\$ 38,533</u> |
| Supplemental disclosures of non-cash investing and financing information | | |
| Property and equipment purchases accrued but not yet paid | \$ 709 | \$ 247 |
| Assets acquired under leasing obligations | \$ 9,300 | \$ — |
| Receivable for lessor funded financing | \$ 1,226 | \$ — |
| Deferred IPO costs included in accrued liabilities and accounts payable | \$ — | \$ 345 |

See accompanying notes to condensed financial statements.

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

1. Organization and Description of Business

Gritstone Oncology, Inc. (the Company) is an immune-oncology company developing personalized cancer immunotherapies to fight multiple cancer types. The Company was incorporated in the state of Delaware on August 5, 2015, and is based in Emeryville, California and Cambridge, Massachusetts, with a manufacturing facility in Pleasanton, California. The Company operates in one segment.

2. Summary of Significant Accounting Policies

Basis of Presentation

The Company's financial statements have been prepared in accordance with United States generally accepted accounting principles (U.S. GAAP). Management has reviewed and evaluated subsequent events from the balance sheet date of June 30, 2018, through the financial statements issue date of August 13, 2018.

Unaudited Interim Condensed Financial Statements

The interim condensed balance sheet as of June 30, 2018, and the statements of operations and comprehensive loss, and cash flows for the six months ended June 30, 2017 and 2018 are unaudited. The unaudited interim condensed financial statements have been prepared on the same basis as the annual financial statements and reflect, in the opinion of management, all adjustments of a normal and recurring nature that are necessary for the fair presentation of the Company's financial position as of June 30, 2018 and its results of operations and cash flows for the six months ended June 30, 2017 and 2018. The financial data and the other financial information disclosed in these notes to the notes to the condensed financial statements related to the six-month periods are also unaudited. The results of operations for the six months ended June 30, 2018 are not necessarily indicative of the results to be expected for the year ended December 31, 2018 or for any other future annual or interim period. The condensed balance as of December 31, 2017 included herein was derived from the audited financial statements as of that date. Certain information and footnote disclosures normally included in annual financial statements prepared in accordance with GAAP have been condensed or omitted. Therefore, these interim condensed financial statements should be read in conjunction with the Company's audited financial statements included elsewhere in this prospectus.

Unaudited Pro Forma Information

Immediately prior to the completion of this offering, all outstanding shares of convertible preferred stock will convert into common stock. Unaudited pro forma condensed balance sheet information as of June 30, 2018 assumes the conversion of all outstanding convertible preferred stock into shares of common stock. The shares of common stock issuable and the proceeds expected to be received in the initial public offering ("IPO") are excluded from such pro forma financial information. Pro forma basic and diluted net loss per share has been computed to give effect to the conversion of all outstanding convertible preferred stock into shares of common stock. The unaudited pro forma net loss per share for the six months ended June 30, 2018 was computed using the weighted-average number of shares of common stock outstanding, including the pro forma effect of the conversion of all outstanding shares of convertible preferred stock into shares of common stock, as if such conversion had occurred at the beginning of the period, or their issuance dates if later. Pro forma net loss per share does not include the shares expected to be sold and related proceeds to be received from the IPO.

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as of the date of the financial statements and the reported amounts of expenses during the reporting period. On an ongoing basis, management evaluates its estimates, including those related to preclinical study trial accruals, fair value of assets and liabilities, the fair value of leased buildings and other assumptions associated with lease financing transactions, and the fair value of common stock and stock-based compensation. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions that management believes to be reasonable under the circumstances. Actual results could differ from those estimates.

Going Concern

The Company has incurred significant losses and negative cash flows from operations since its inception and had an accumulated deficit of \$90.5 million at June 30, 2018 and does not expect to experience positive cash flows in the foreseeable future.

As of June 30, 2018, the Company had \$64.5 million in cash, cash equivalents and marketable securities and working capital of \$61.7 million. In July 2018, the Company sold 1,058,021 shares of Series C convertible preferred stock at a price of \$1.89 per share for net cash proceeds of \$2.0 million. See Note 8 for a discussion of the Series C convertible preferred stock financing. Management expects to incur additional losses in the future to conduct product research and development and to conduct pre-commercialization activities and recognizes the need to raise additional capital to fully implement its business plan. The Company intends to raise such capital through the sale of convertible stock, additional equity, debt financings or strategic alliances with third parties. However, there can be no assurance that the Company will be successful in acquiring additional funding at levels sufficient to fund its operations or on terms acceptable to the Company. These conditions raise substantial doubt about the Company's ability to continue as a going concern for a period of one year from the date of the issuance of these condensed financial statements. If the Company is unsuccessful in its efforts to raise additional financing, the Company could be required to significantly reduce operating expenses and delay, reduce the scope of or eliminate some of its development programs or its future commercialization efforts, out-license intellectual property rights to its product candidates and sell unsecured assets, or a combination of the above, any of which may have a material adverse effect on the Company's business, results of operations, financial condition and/or its ability to fund its scheduled obligations on a timely basis or at all. The accompanying financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. The condensed financial statements do not reflect any adjustments relating to the recoverability and classification of assets or the amounts and classification of liabilities that might be necessary if the Company is unable to continue as a going concern.

Other Risks and Uncertainties

The Company is subject to a number of risks similar to those of other preclinical-stage immunotherapy companies, including dependence on key individuals; the need to develop commercially viable therapeutics; competition from other companies, many of which are larger and better capitalized; and the need to obtain adequate additional financing to fund the development of its products. The Company currently depends on third-party suppliers for key materials and services used

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

in its research and development manufacturing process, and is subject to certain risks related to the loss of these third-party suppliers or their inability to supply the Company with adequate materials and services.

Fair Value of Financial Instruments

Accounting Standards Codification Topic (ASC) 820, *Fair Value Measurement*, establishes a fair value hierarchy for instruments measured at fair value that distinguishes between assumptions based on market data (observable inputs) and the Company's own assumptions (unobservable inputs). Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the inputs that market participants would use in pricing the asset or liability, and are developed based on the best information available in the circumstances.

ASC 820 identifies fair value as the exchange price, or exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As a basis for considering market participant assumptions in fair value measurements, ASC 820 establishes a three-tier fair value hierarchy that distinguishes between the following:

- Level 1 inputs are quoted prices in active markets that are accessible at the market date for identical assets or liabilities.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 inputs are unobservable inputs that reflect the Company's own assumptions about the assumptions market participants would use in pricing the assets or liability. Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the degree of judgment exercised by the Company in determining fair value is greatest for instruments categorized in Level 3. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value instrument.

The carrying amounts reflected on the balance sheets for cash and cash equivalents, prepaid expenses and other current assets, accounts payable, accrued compensation and accrued liabilities approximate their fair values due to their short-term nature.

Cash, Cash Equivalents, and Restricted Cash

Cash equivalents, which consist primarily of highly liquid investments with maturities of three months or less when purchased, are stated at cost which approximates fair value. These assets include investments in money market funds that invest in U.S. Treasury obligations and certificates of deposit which are stated at fair value.

The Company has issued a letter of credit under a lease agreement which has been collateralized by a cash deposit for an equal amount and is recorded within deposits and other long-term assets on the balance sheet based on the term of the underlying lease. The following table provides a

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

reconciliation of cash, cash equivalents and restricted cash reported within the balance sheets that sum to the total of the same amounts shown in the statements of cash flows (in thousands).

| | December 31, 2017 | June 30, 2018 |
|---|----------------------|------------------|
| Cash and cash equivalents | \$ 39,007 | \$37,541 |
| Restricted cash | 992 | 992 |
| Total, cash, cash equivalents and restricted cash | <u>\$ 39,999</u> | <u>\$38,533</u> |

Deferred IPO Costs

Deferred IPO costs of \$1.1 million are capitalized and included with prepaid expenses and other current assets on the condensed balance sheet as of June 30, 2018. There were no deferred IPO costs as of December 31, 2017. The deferred IPO costs will be offset against proceeds from the IPO upon the consummation of the IPO. In the event the IPO is terminated, all capitalized deferred IPO costs will be expensed.

Marketable Securities

The Company invests its excess cash in investment grade short-term fixed income securities. Such investments in marketable securities are considered available for sale, and reported at fair value with unrealized gains and losses included as a component of accumulated other comprehensive income (loss). Marketable securities with original maturities of greater than 90 days from the date of purchase but less than one year from the balance sheet date are classified as short-term, while marketable securities with maturities in one year or beyond one year from the balance sheet date are classified as long term. The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity, which is included in interest income on the statements of operations and comprehensive loss. Realized gains and losses and declines in value judged to be other than temporary, if any, on available-for-sale securities are included in interest and other income (expense), net. The cost of securities sold is determined using specific identification method.

The Company periodically evaluates whether declines in fair values of its marketable securities below their book value are other than temporary. This evaluation consists of several qualitative and quantitative factors regarding the severity and duration of the unrealized loss as well as the Company's ability and intent to hold the marketable security until a forecasted recovery occurs. Additionally, the Company assesses whether it has plans to sell the security or it is more likely than not it will be required to sell any marketable securities before recovery of its amortized cost basis. Factors considered include quoted market prices, recent financial results and operating trends, implied values from any recent transactions or offers of investee securities, credit quality of debt instrument issuers, other publicly available information that may affect the value of the marketable security, duration and severity of the decline in value, and the Company's strategy and intentions for holding the marketable security. To date the Company has not recorded any impairment charges on its marketable securities related to other-than-temporary declines in market value.

Property and Equipment, Net

Property and equipment are stated at cost, less accumulated depreciation and amortization. Maintenance and repairs that do not improve or extend the lives of the respective assets are expensed to operations as incurred.

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

Depreciation is calculated using the straight-line method over the estimated useful lives of the respective assets, which are as follows:

| <u>Asset</u> | <u>Estimated Useful Life</u> |
|---------------------------------|--------------------------------------|
| Computer equipment and software | 3 to 5 years |
| Furniture and fixtures | 5 years |
| Laboratory equipment | 5 to 7 years |
| Leasehold improvements | Shorter of useful life or lease term |

Property and equipment includes a leased building which did not meet the sale-leaseback criteria and was recorded at its fair value plus the cost of improvements made during the construction period. The building is being depreciated to a residual value over the lease term whereby the book value of the building will not be greater than the remaining lease financing obligation when the lease ends (see Note 6).

Stock-Based Compensation

The Company measures and recognize compensation expense for all stock-based awards made to employees and directors based on the grant date estimated fair value of each award. Such expense is recognized on a straight-line basis over the requisite service period which is generally the vesting period for the entire award. Expense is adjusted for estimated forfeitures. Forfeitures of awards are estimated based on historical forfeiture experience and the experience of other companies in the same industry. The estimate of forfeitures will be adjusted over the service period to the extent that actual forfeitures differ, or are expected to differ, from prior estimates.

The valuation model used for calculating the fair value of awards for stock compensation expense is the Black-Scholes option-pricing model (the Black-Scholes model). The Black-Scholes model requires management to make assumptions and judgments about the variables used in the calculation, including the expected term (weighted average period of time that the options granted are expected to be outstanding), the expected volatility of common stock, an assumed risk-free interest rate, and expected dividends the Company may pay. Management uses the simplified calculation of the expected term. Volatility is based on an average of the historical volatilities of the common stock of entities with characteristics similar to the Company's. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option. The Company uses an assumed dividend yield of zero as the Company has never paid dividends and has no current plans to pay any dividends on its common stock.

Management recognizes stock-based compensation expense for stock options granted to non-employees based on the estimated fair value of the award on the measurement dates using the Black-Scholes model. The estimated fair value of options granted to non-employees is re-measured at each reporting period using the Black-Scholes model until the awards vest and the resulting change in value, if any, is recognized in the statement of operations and comprehensive loss.

Research and Development Expenses

All research and development costs, including work performed by third parties, are expensed as incurred. Research and development costs consist of salaries and other personnel-related expenses, including associated stock-based compensation, consulting fees, laboratory supplies, and facility costs, as well as fees paid to other entities that conduct certain research and development activities on behalf of the Company. Costs to develop the Company's technologies are recorded as research and

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Notes to Unaudited Interim Condensed Financial Statements

development expense unless certain costs which meet the criteria to be capitalized as internal-use software costs is met. Payments made prior to the receipt of goods or services to be used in research and development are capitalized until the goods are received or services are rendered.

The Company has and may continue to enter into license agreements to access and utilize certain technology. In each case, the Company evaluates the license agreement results in the acquisition of an asset or a business. To date, none of the Company's license agreements have been considered to be acquisitions of businesses. For asset acquisitions, the upfront payments to acquire such licenses, as well as any future milestone payments, are immediately recognized as research and development expense when paid, provided that there is no alternative future use of the rights in other research and development projects. These license agreements may also include contingent consideration in the form of cash payments to be made for future milestone events. The Company assess whether such contingent consideration meets the definition of a derivative and to date the Company has determined that such contingent consideration are not derivatives.

Pre-clinical costs are a component of research and development expenses. The Company accrues and expenses pre-clinical trial activities performed by third parties based upon actual work completed in accordance with agreements established with its service providers. The Company determines the actual costs through discussions with internal personnel and external service providers as to the progress or stage of completion of services and the agreed-upon fee to be paid for such services.

Leases and Deferred Rent and Lease Financing Obligation

The Company rents its office space and facilities under non-cancelable operating lease agreements and recognizes related rent expense on a straight-line basis over the term of the lease. The Company's lease agreements contain rent holidays, scheduled rent increases, and renewal options. Rent holidays and scheduled rent increases are included in the determination of rent expense to be recorded ratably over the lease term. The Company does not assume renewals in its determination of the lease term unless they are deemed to be reasonably assured at the inception of the lease. The Company begins recognizing rent expense on the date that it obtains the legal right to use and control the leased space. Deferred rent consists of the difference between cash payments and the recognition of rent expense on a straight-line basis for the buildings the Company occupies.

Funding of leasehold improvements by the Company's landlord is accounted for as a tenant improvement allowance and recorded as current and non-current deferred rent liabilities and amortized on a straight-line basis as a reduction of rent expense over the term of the lease.

In certain arrangements, the Company is involved in the construction of improvements to buildings it is leasing. To the extent the Company is involved with the structural improvements of the construction project or takes construction risk, the Company is considered to be the owner of the building and related improvements for accounting purposes during the construction period. The Company records the fair value of the building and related improvements subject to the lease within property and equipment on the balance sheet. The Company also records a corresponding lease financing obligation on its balance sheet representing the amounts financed by the lessor for the building and lessor financed improvements. Once a construction project is complete, the Company considers the requirements for sale-leaseback accounting treatment. If the Company concludes the arrangement does not qualify for sale-leaseback accounting treatment, the building and improvements remain on the Company's balance sheet and are subject to depreciation and assessing for impairment.

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For such arrangements, at both pre and post the construction period, the Company bifurcates its lease payments into a portion allocated to the building and a portion allocated to the parcel of land on which the building has been built. The portion of the lease payments allocated to the land is treated for accounting purposes as operating lease payments, and therefore is recorded as rent expense in the statements of operations and comprehensive loss. The portion of the lease payments allocated to the building is further bifurcated into a portion allocated to interest expense and a portion allocated to reduce the lease financing obligation. The interest rate used for the lease financing obligation represents the Company's estimated incremental borrowing rate at the inception of the lease, adjusted to reduce any built in loss.

Comprehensive Loss

Comprehensive loss includes net loss and certain changes in stockholders' equity that are excluded from net loss, primarily unrealized losses on the Company's marketable securities.

Net Loss per Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock outstanding during the period, without consideration for common stock equivalents. Diluted net loss per share is the same as basic net loss per share, since the effects of potentially dilutive securities are antidilutive given the net loss for each period presented.

Recent Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. ASU 2016-02 amends a number of aspects of lease accounting, including requiring lessees to recognize almost all leases with a term greater than one year as a right-of-use asset and corresponding liability, measured at the present value of the lease payments. Subsequent measurement, including the presentation of expenses and cash flows, will depend on the classification of the lease as either a finance or an operating lease. Initial costs directly attributable to negotiating and arranging the lease will be included in the asset. For public entities, this standard is effective for annual reporting periods beginning after December 31, 2018, including interim periods within that reporting period. Originally, entities were required to adopt ASU 2016-02 using a modified retrospective approach, which required prior periods to be presented under this new standard with various practical expedients allowed. In July 2018, the Financial Accounting Standards Board ("FASB") issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which now allows entities the option of recognizing the cumulative effect of applying the new standard as an adjustment to the opening balance of retained earnings in the year of adoption (January 1, 2019) while continuing to present all prior periods under previous lease accounting guidance. While the Company is currently evaluating the impact of the adoption of this standard on its financial statements and related disclosures, the Company anticipates recognition of additional assets and corresponding liabilities related to leases on its balance sheets, expanded footnote disclosures and potential changes to how the Company has accounted for its Pleasanton Lease.

In January 2017, the FASB issued ASU 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. This ASU clarifies the definition of a business when evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The Company adopted ASU 2017-01 effective January 1, 2018. The adoption of this accounting standards update did not have a material impact on the Company's condensed financial statements.

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ASU 2018-07, Compensation—Stock Compensation (Topic 718) is intended to reduce cost and complexity and to improve financial reporting for share-based payments issued to non-employees (for example, service providers, external legal counsel, suppliers, etc.). The ASU expands the scope of Topic 718, Compensation—Stock Compensation, which currently only includes share-based payments issued to employees, to also include share-based payments issued to non-employees for goods and services. Consequently, the accounting for share-based payments to non-employees and employees will be substantially aligned. ASU 2018-07 is effective for annual and interim periods beginning after December 15, 2018. Early adoption of the standard is permitted. The standard will be applied in a retrospective approach for each period presented. The Company is currently evaluating the timing and impact of adopting this accounting standard update on its condensed financial statements and related disclosures.

On December 22, 2017, the U.S. federal government enacted the Tax Cuts and Jobs Act (“the Act”). The Tax Act contains, among other things, significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21% for tax years beginning after December 31, 2017, limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, implementing a territorial tax system, and requiring a mandatory one-time tax on U.S. owned undistributed foreign earnings and profits known as the transition tax. In December 2017, SEC staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act (“SAB 118”) to address the accounting implications of recently enacted U.S. federal tax reform. SAB 118 allows companies to record provisional amounts during a measurement period not to extend beyond one year of the enactment date to address ongoing guidance and tax interpretations that are expected over the next 12 months. The Company has adopted SAB 118 and currently considers its accounting of the impact of U.S. federal tax reform to be incomplete but continues to make a reasonable estimate of the effects on our existing deferred tax assets. The Company expects to complete the remainder of the analysis within the measurement period in accordance with SAB 118. Adjustments, if any, are not expected to impact the statement of operations and comprehensive loss due to the full valuation allowance on the Company’s deferred tax assets.

3. Cash Equivalents and Marketable Securities

The amortized cost, unrealized gains and losses and fair values of cash equivalents and marketable securities were as follows (in thousands):

| Description | December 31, 2017 | | | Fair Value |
|---------------------------|-------------------|------------------|-------------------|-----------------|
| | Amortized Cost | Unrealized Gains | Unrealized Losses | |
| Money market funds | \$ 27,711 | \$ — | \$ — | \$27,711 |
| Commercial paper | 32,257 | — | (48) | 32,209 |
| Corporate debt securities | 19,930 | — | (26) | 19,904 |
| | <u>\$ 79,898</u> | <u>\$ —</u> | <u>\$ (74)</u> | <u>\$79,824</u> |
| Classified as: | | | | |
| Cash equivalents | | | | \$32,878 |
| Marketable securities | | | | 46,946 |
| | | | | <u>\$79,824</u> |

Gritstone Oncology, Inc.
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| Description | June 30, 2018, | | | Fair Value |
|---------------------------|------------------|------------------|-------------------|-----------------|
| | Amortized Cost | Unrealized Gains | Unrealized Losses | |
| Money market funds | \$ 21,535 | \$ — | \$ — | \$21,535 |
| Commercial paper | 18,468 | — | (11) | 18,457 |
| Corporate debt securities | 8,512 | — | (20) | 8,492 |
| | <u>\$ 48,515</u> | <u>\$ —</u> | <u>\$ (31)</u> | <u>\$48,484</u> |
| Classified as: | | | | |
| Cash equivalents | | | | \$21,535 |
| Marketable securities | | | | 26,949 |
| | | | | <u>\$48,484</u> |

As of December 31, 2017 and June 30, 2018, the Company had a total of \$86.0 million and \$64.5 million in cash, cash equivalents and short-term marketable securities, which includes \$39.0 million and \$37.6 million in cash and cash equivalents and \$46.9 million and \$26.9 million in short-term marketable securities, respectively.

All marketable securities held as of June 30, 2018, had contractual maturities of less than one year. There have been no realized gains or losses on marketable securities for the periods presented. None of the Company's investments in marketable securities has been in an unrealized loss position for more than one year. The Company determined that it did have the ability and intent to hold all marketable securities that have been in a continuous loss position until maturity or recovery, thus there has been no recognition of any other-than-temporary impairment in the six months ended June 30, 2018.

4. Fair Value Measurements

The Company's financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used in such measurements were as follows (in thousands):

| Description | December 31, 2017 | | | |
|---------------------------|-------------------|-----------------|------------------|-------------|
| | Total | Level 1 | Level 2 | Level 3 |
| Money market funds | \$ 27,711 | \$27,711 | \$ — | \$ — |
| Commercial paper | 32,209 | — | 32,209 | — |
| Corporate debt securities | 19,904 | — | 19,904 | — |
| | <u>\$79,824</u> | <u>\$27,711</u> | <u>\$ 52,113</u> | <u>\$ —</u> |

| Description | June 30, 2018 | | | |
|---------------------------|-----------------|-----------------|-----------------|-------------|
| | Total | Level 1 | Level 2 | Level 3 |
| Money market funds | \$21,535 | \$21,535 | \$ — | \$ — |
| Commercial paper | 18,457 | — | 18,457 | — |
| Corporate debt securities | 8,492 | — | 8,492 | — |
| | <u>\$48,484</u> | <u>\$21,535</u> | <u>\$26,949</u> | <u>\$ —</u> |

The Company measures the fair value of money market funds based on quoted prices in active markets for identical securities. Commercial paper and corporate debt securities are valued taking into

Gritstone Oncology, Inc.
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consideration valuations obtained from third-party pricing services. The pricing services utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, issuer credit spreads; benchmark securities; prepayment/default projections based on historical data; and other observable inputs.

There were no transfers between Level 1 and Level 2 during the periods presented.

5. Property and Equipment, Net

Property and equipment and related accumulated depreciation and amortization are as follows (in thousands):

| | December 31, 2017 | June 30, 2018 |
|--|----------------------|------------------|
| Computer equipment and software | \$ 353 | \$ 403 |
| Furniture and fixtures | 785 | 809 |
| Laboratory equipment | 10,515 | 12,605 |
| Leasehold improvements | 2,977 | 3,017 |
| Buildings and improvements capitalized under lease financing transaction | 15,371 | 15,371 |
| | <u>30,001</u> | <u>32,205</u> |
| Less accumulated depreciation and amortization | (2,790) | (4,672) |
| | <u>\$ 27,211</u> | <u>\$27,533</u> |

Depreciation and amortization expense was \$0.9 million for the six month period ended June 30, 2017, and \$1.9 million for the six month period ended June 30, 2018.

6. Commitments and Contingencies

Leases

In November 2015, the Company entered into an 84-month non-cancelable operating lease, effective March 2016, for a new facility in Emeryville, California, with laboratory and office space. In conjunction with signing the lease, the Company paid a cash security deposit of \$0.05 million. The lease agreement includes an escalation clause for increased rent and a renewal provision allowing the Company to extend this lease for an additional three years at the prevailing rental rate.

In February 2016, the Company entered into a 67-month non-cancellable operating lease effective October 2016 for a new facility in Cambridge, Massachusetts, with laboratory and office space. In conjunction with signing the lease, the Company paid a cash security deposit of \$0.3 million. The lease agreement includes an escalation clause for increased rent and a renewal provision allowing the Company to extend this lease for an additional three years at the prevailing rental rate. The lessor provided the Company a tenant improvement allowance for a total of \$2.1 million to complete the laboratory and office renovation. The Company recorded the tenant allowance received as leasehold improvements under the property and equipment account and deferred rent liability on the accompanying condensed balance sheets.

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In March 2017, the Company entered into a noncancelable operating lease (the Pleasanton Lease) to lease 42,620 square feet of office, cleanroom, and laboratory support manufacturing space in Pleasanton, California (the Pleasanton Facility). Subsequently, in April 2017, the Company took possession of the space. The Pleasanton Lease includes a free rent period, escalating rent payments and a term that expires on November 30, 2024. The Company has the option to extend the lease term for a period of five years at the then market rental rate. The Company's obligation to pay rent commenced on December 1, 2017. The Company obtained an irrevocable letter of credit in March 2017 in the initial amount of \$1.0 million as a security deposit to the Pleasanton Lease, which may be drawn down by the landlord in the event the Company fails to fully and faithfully perform all of its obligations. The letter of credit may be reduced based on certain levels of cash and cash equivalents the Company holds. The Pleasanton Lease further provides that the Company is obligated to pay to the landlord its proportionate share of certain basic operating costs, including taxes and operating expenses.

In connection with the Pleasanton Lease, the Company received a tenant improvement allowance of \$1.2 million from the landlord for the costs associated with the design, development and construction of tenant improvements for the Pleasanton Facility. The scope of the tenant improvements did not qualify under the lease accounting guidance as "normal tenant improvements" and the Company was deemed owner of the leased building during the construction period for accounting purposes. The Company has therefore capitalized the \$9.3 million fair value of the leased building within property and equipment, net, and recognized a corresponding non-current lease financing obligation in the condensed balance sheet as of December 31, 2017 and June 30, 2018. The fair value of the leased building was estimated using a market approach that utilized comparable observable sales for similar assets (Level 2 inputs). The Company has also recognized building improvements totaling \$6.1 million for additions to the leased building incurred by the Company during the construction period, of which \$1.2 million were due but had not yet been received from the landlord as of December 31, 2017 and were recorded as an increase to the lease financing obligation and prepaid and other current assets on the condensed balance sheet. Such amount were subsequently reimbursed by the landlord in April 2018. In November 2017, construction on the Pleasanton Facility was substantially completed and the leased property was placed into service. The Company determined the completed construction project did not qualify for sale-leaseback accounting due to the collateral held by the landlord in the form of a letter of credit and instead has been accounted for as a financing lease transaction. The leased building for the Pleasanton Facility and related improvements remain on the Company's balance sheet as of December 31, 2017 and rental payments associated with the Pleasanton Lease have been allocated to operating lease expense for the ground underlying the leased building and principal and interest payments on the lease financing obligation.

For the six months ended June 30, 2017 and June 30, 2018, the Company recorded rent expense associated with the ground lease of approximately \$26,100 and \$52,200 in the statements of operations and comprehensive loss, respectively. Total interest, which represents the cost of the lease financing obligation under the Pleasanton Lease agreement, was approximately \$0.4 million for the six months ended June 30, 2018, which was recognized within the statement of operations and comprehensive loss. No interest expense was recognized for financing obligation while the leased building was being constructed during the six months ended June 30, 2017. The allocation of the Pleasanton Lease payment to ground lease rent expense and principal and interest expense on the lease financing obligation was estimated using income and market approach that utilized comparable observable sales for similar assets, land capitalization rates and an estimate of the Company's incremental borrowing rate (Level 2 and Level 3 inputs).

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Notes to Unaudited Interim Condensed Financial Statements

As of June 30, 2018, minimum annual rental payments under the Company's non-cancelable operating lease agreements and lease financing obligation are as follows (in thousands):

| | Lease Financing Obligation | Operating Leases |
|--|----------------------------------|---------------------|
| 2018 (remaining six months) | \$ 325 | \$ 823 |
| 2019 | 794 | 1,700 |
| 2020 | 818 | 1,751 |
| 2021 | 843 | 1,803 |
| 2022 | 868 | 1,118 |
| Thereafter | 1,736 | 396 |
| Total minimum payments | 5,384 | <u>\$ 7,591</u> |
| Less: Amount representing interest expense | (4,754) | |
| | 630 | |
| Residual value of lease financing obligation | 9,896 | |
| | 10,526 | |
| Less: Lease financing obligation, short-term | (18) | |
| Lease financing obligation, long-term | <u>\$ 10,508</u> | |

Rent expense was \$0.6 million and \$0.6 million for the six month periods ended June 30, 2017 and 2018, respectively.

Agreement with CRO

In September 2017, the Company entered into a contract research and development agreement with a third party contract research organization (CRO) to provide research, analysis and antibody samples to further the Company's development of personalized immunotherapies in the treatment of cancer. Under the agreement, the Company paid an upfront payment of \$0.5 million to the CRO. The upfront payment has been capitalized and will be recognized as research and development expense using the straight-line method over the term of the agreement, which is one year. The Company is also obligated to pay up to \$0.4 million to the CRO upon the completion of certain phases of the research services. These costs will be recorded to research and development expense over the expected period of each phase of the research services. The Company is also obligated to pay the CRO certain milestone payments of up to \$36.4 million on achievement of specified events. None of these events had occurred as of June 30, 2018. During the six months ended June 30, 2018, the Company recognized a total of \$0.6 million of research and development expense under the agreement.

7. License Agreements

Arbutus Biopharma Corporation

In October 2017, the Company entered into an Exclusive License Agreement by and between Arbutus Biopharma Corporation (Arbutus) and Protiva Biotherapeutics Inc. a wholly owned subsidiary of Arbutus. Certain terms of the agreement were modified by amendment in July 2018. Under the license agreement, the Company has an exclusive license to utilize certain Arbutus intellectual property including patents and know-how relating to immunotherapy. Under this license agreement, the

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

Company paid an upfront payment of \$5.0 million which was included in research and development expenses during 2017. The Company also reimbursed Arbutus for materials and personnel costs totaling \$0.2 million, which were included in research and development expenses during 2017. During the six months ended June 30, 2018, the Company reimbursed Arbutus for materials and personnel costs totaling \$0.3 million. The Company is obligated to pay Arbutus certain milestone payments up to \$123.5 million on achievement of specified events, and royalties of not more than 3.5% on sales of its licensed products. None of these events had occurred as of June 30, 2018 and no royalties were due from the sale of licensed products.

Non-Profit Hospital Cancer Center

In January 2016, the Company entered into an Exclusive License Agreement with a non-profit hospital cancer center. Under the license agreement, the Company has an exclusive license to utilize certain patents and know-how relating to immunotherapy for an insignificant upfront payment, cash milestone payments on achievement of specified events, and a low single digit royalty on sales of licensed products. The achievement of the milestones and payment of royalties is dependent upon obtaining regulatory approval. None of the events had occurred as of June 30, 2018 and no royalties were due from the sales of licensed products. The Company also issued a ten-year warrant to the cancer center for the right to purchase 277,778 shares of its common stock at \$0.05 per share. The estimated fair value of the warrant was not significant and was included in research and development expense and additional paid-in-capital. The Warrant was exercised in full in January 2018.

8. Convertible Preferred Stock

Series A Equity Financing

The Company entered into a Series A preferred stock purchase agreement (Series A Preferred Stock Purchase Agreement), with certain investors on September 18, 2015, and upon approval by the Company's Board of Directors, the Company completed a Series A convertible preferred stock financing (Series A—First Tranche) at a price per share of \$1.00. The net cash proceeds from this round of financing totaled \$25.4 million, and 25,525,000 shares of Series A convertible preferred stock were issued. Issuance costs totaled \$0.1 million and were recorded as a reduction of the proceeds.

On April 1, 2016, and upon approval by the Company's Board of Directors, the Company completed a Series A convertible preferred stock financing (Series A—Second Tranche) at a price per share of \$1.00. The net cash proceeds from this round of financing totaled \$35.7 million, and 35,735,000 shares of Series A convertible preferred stock were issued. Issuance costs totaled \$0.02 million and were recorded as a reduction of the proceeds.

Upon approval by the Company's Board of Directors and a majority of the holders of the Series A convertible preferred stock, the Company could proceed with the third closing of the Series A convertible preferred stock for a total of 40,840,000 shares at a purchase price of \$1.00 per share (Series A—Third Tranche). However, for a period of 90 days following such approval, the Company may solicit alternative financing at financially superior terms to those of the Series A—Third Tranche, including a purchase price greater than \$1.00 per share (the Superior Financing Transaction). If approved by the Board of Directors, the Company's obligation to complete the Series A—Third Tranche shall terminate, and the Superior Financing Transaction would proceed. Each Series A convertible preferred stockholder will have the right to purchase at least 50% of its original Series A—Third Tranche amount in the Superior Financing Transaction. The Series A—Second Tranche and Series A—Third Tranche rights are considered to be mutual options as neither the purchasers nor the

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

Company have a commitment or obligation to purchase or sell additional shares. As such, these rights are not accounted for separately. In connection with the Company's Series B Equity Financing the Company's Board of Directors and investors terminated the ability to complete the Series A—Third Tranche.

Series B Equity Financing

The Company entered into a Series B preferred stock purchase agreement (Series B Preferred Stock Purchase Agreement), with certain investors on September 6, 2017 and October 20, 2017, and upon approval by the Company's Board of Directors, the Company completed a Series B convertible preferred stock financing (Series B) at a price per share of \$1.56. The net cash proceeds totaled \$95.8 million and 61,543,319 shares of Series B convertible preferred stock were issued. Issuance costs totaled \$0.2 million and were recorded as a reduction of the proceeds.

Series C Equity Financing

The Company entered into a Series C preferred stock purchase agreement (Series C Preferred Stock Purchase Agreement), with certain investors on June 29, 2018, and upon approval by the Company's Board of Directors, the Company completed a Series C convertible preferred stock financing (Series C) at a price per share of \$1.89. The net cash proceeds totaled \$8.9 million and 4,761,904 shares of Series C convertible preferred stock were issued. Issuance costs totaled \$0.1 million and were recorded as a reduction of the proceeds. In July 2018, the Company sold an additional 1,058,021 shares of Series C convertible preferred stock at a price of \$1.89 per share for net cash proceeds of \$2.0 million.

The preferred stock has various features, including convertibility and non-cumulative dividends. The Company determined that none of the features required bifurcation from the underlying shares, either because they are clearly and closely related to the underlying shares or because they do not meet the definition of a derivative. The Series A, Series B and Series C convertible preferred stock are considered permanent equity and have not been accreted up to their redemption value. The Second and Third Tranche rights are considered to be mutual options as neither the purchasers nor the Company have a commitment or obligation to purchase or sell additional shares. As such, these rights are not accounted for separately. Moreover, in any such redemption (i.e. deemed liquidation) all equity holders (common and preferred) will receive the same form of consideration. The preferred stockholders cannot contractually redeem their shares, or redeem their shares through separate negotiation, without the Company's common stockholders being able to also redeem their shares for the same form of consideration.

Convertible preferred stock consisted of the following (in thousands, except share and per share amounts):

| | December 31, 2017 | | | | |
|-------------------------|----------------------|-------------------------------------|--------------------------------|-------------------|---------------------------|
| | Shares Authorized | Shares Issued and Outstanding | Issuance Price Per Share | Carrying Value | Liquidation Preference |
| Series B | 64,102,551 | 61,543,319 | \$ 1.56 | \$ 95,798 | \$ 96,008 |
| Series A—First Tranche | 110,000,000 | 25,525,000 | \$ 1.00 | 25,425 | 25,525 |
| Series A—Second Tranche | — | 35,735,000 | \$ 1.00 | 35,714 | 35,735 |
| | <u>174,102,551</u> | <u>122,803,319</u> | | <u>\$ 156,937</u> | <u>\$ 157,268</u> |

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

| | June 30, 2018 | | | | |
|-------------------------|----------------------|-------------------------------------|--------------------------------|-------------------|---------------------------|
| | Shares Authorized | Shares Issued and Outstanding | Issuance Price Per Share | Carrying Value | Liquidation Preference |
| Series C | 16,425,000 | 4,761,904 | \$ 1.89 | \$ 8,928 | \$ 9,000 |
| Series B | 61,543,319 | 61,543,319 | \$ 1.56 | 95,798 | 96,008 |
| Series A—First Tranche | 61,260,000 | 25,525,000 | \$ 1.00 | 25,425 | 25,525 |
| Series A—Second Tranche | — | 35,735,000 | \$ 1.00 | 35,714 | 35,735 |
| | <u>139,228,319</u> | <u>127,565,223</u> | | <u>\$ 165,865</u> | <u>\$ 166,268</u> |

The rights, preferences, and privileges of the convertible preferred stock are as follows:

Redemption Rights

The preferred stock is not redeemable by holders unless a redemption event occurs. A redemption event will only occur upon the liquidation or winding up of the Company, a greater than 50% change in control, or the sale of substantially all of the assets of the Company. Management has also elected not to adjust the carrying values of the Series A, Series B and Series C convertible preferred stock to the redemption value of such shares, since it is uncertain whether or when a redemption event will occur. Subsequent adjustments to increase the carrying value to the redemption values will be made when it becomes probable that such a redemption will occur.

Dividends Rights

The holders of Series A, Series B and Series C convertible preferred stock are entitled to receive dividends, from any assets legally available, prior and in preference to any declaration or payment of any dividend to the common stockholders, at the rate of 8% of the original issue price (as determined on a per annum basis and on an as-converted basis). Such dividends are payable if and when declared by the Board of Directors and are not cumulative. After payment of such dividends, any additional dividends shall be distributed among the holders of the Series A, Series B and Series C convertible preferred stock and common stock pro rata based on the number of shares of common stock then held by each holder (assuming conversion of all such preferred stock into common stock). As of December 31, 2017 and June 30, 2018, no such dividends had been declared or accrued.

Liquidation Rights

In the event of any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary (Liquidation Event), the holders of Series C convertible preferred stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of the Series A and B convertible preferred stock, \$1.89 per share (as adjusted for any stock splits, combinations, reorganizations, or similar transactions, plus any declared and unpaid dividends). The holders of Series B convertible preferred stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of the Series A convertible preferred stock, \$1.56 per share (as adjusted for any stock splits, combinations, reorganizations, or similar transactions, plus any declared and unpaid dividends). After payment of the above, the holders of Series A convertible preferred stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of common stock, \$1.00 per share (as adjusted for any stock splits, combinations, reorganizations, or similar transactions, plus any declared and unpaid dividends).

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

If, upon the occurrence of such an event, the proceeds to be distributed are insufficient to permit the payment to such holders of the full preferential amounts, then the entire amount legally available for distribution shall be distributed among the holders of the Series A, Series B and Series C preferred stock in proportion to the full preferential amount that each such holder is otherwise entitled to receive had such proceeds been available.

After liquidation preference payments have been made to the holders of the convertible preferred stock as described above, all of the remaining assets and funds of the Company are to be distributed ratably among the holders of the preferred and common stock, as if the preferred stock had been converted to common stock. However, Series C preferred stock holders are limited to the greater of (1) \$9.45 per share (as adjusted for any stock splits, combinations, reorganizations or similar transactions) and (2) the amount the holder would have received if all shares of Series C convertible preferred stock had been converted to common stock prior to such liquidation, dissolution, or winding up of the Company. Series B preferred stockholders are limited to the greater of (1) \$7.80 per share (as adjusted for any stock splits, combinations, reorganizations or similar transactions) and (2) the amount the holder would have received if all shares of Series B convertible preferred stock had been converted to common stock prior to such liquidation, dissolution, or winding up of the Company. Series A preferred stockholders are limited to the greater of (1) \$5.00 per share (as adjusted for any stock splits, combinations, reorganizations or similar transactions) and (2) the amount the holder would have received if all shares of Series A convertible preferred stock had been converted to common stock prior to such liquidation, dissolution, or winding up of the Company.

Voting Rights

Except as otherwise required by law, the holders of common and Series A, Series B and Series C convertible preferred stock vote together as a single class. The holders of the convertible preferred stock are entitled to the number of votes equal to the number of shares of common stock into which the convertible preferred stock could be converted on the record date for the vote, or upon the written consent of the stockholders.

The holders of the Series A convertible preferred stock are entitled to elect three directors of the Company, the holders of the Series B convertible preferred stock are entitled to elect one director of the Company, and the holders of common stock shall be entitled to elect one director of the Company.

Conversion Rights

Each share of Series A, Series B and Series C convertible preferred stock, at the option of the holder and at any time after the date of issuance, is convertible into the number of shares of common stock determined by dividing the respective original issue price by the conversion price (the Conversion Price). At June 30, 2018, the Series A, Series B and Series C Conversion Prices are \$1.00, \$1.56 and \$1.89, respectively, and are subject to certain future adjustments.

Conversion occurs at the conversion rate (i) upon the closing of the sale of common stock at a price of at least \$2.27 per share, 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 \$50.0 million of net proceeds, or (ii) at the election of (a) the holders of at least a majority of the then outstanding shares of such Series A preferred stock, (b) the holders of at least a majority of the then-outstanding shares of such Series B preferred stock, and (c) the holders of at least a majority of the then outstanding shares of such Series C preferred stock. Through June 30, 2018, the Company has

Gritstone Oncology, Inc.
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sufficient authorized and unissued common shares available to settle any conversion event. As part of the Company's Series C convertible preferred stock financing, the Company's certificate of incorporation was amended to reduce the initial public offering automatic conversion price for the Series A and B convertible preferred stock from \$3.12 to \$2.27 per share. The Company accounted for this as a modification of an instrument akin to equity that resulted in no incremental fair value being attributed to the Series A and Series B convertible preferred stock.

9. Stock-Based Compensation

2015 Equity Incentive Plan

In February 2018, the Company's board approved a 3,500,000 share increase in the number of shares to be reserved under the Company's 2015 Equity Incentive Plan.

Stock Option Activity

A summary of the stock plan activity is as follows:

| | Options Available for Grant | Outstanding Options | Weighted Average Exercise Price |
|-------------------------------|-----------------------------------|------------------------|--|
| Balances at December 31, 2017 | 4,320,565 | 9,328,050 | \$ 0.13 |
| Reserved | 3,500,000 | — | — |
| Granted | (3,133,930) | 3,133,930 | 0.46 |
| Exercised | — | (268,585) | 0.07 |
| Forfeited | 685,981 | (685,981) | 0.19 |
| Repurchased | 207,813 | — | 0.05 |
| Balances at June 30, 2018 | <u>5,580,429</u> | <u>11,507,414</u> | 0.22 |

For the six months ended June 30, 2017 and 2018, the total intrinsic value of stock option awards exercised was \$0.07 million and \$0.26 million, respectively, determined at the date of option exercise, and the total cash received upon exercise of stock options was not significant for either period. The total intrinsic value of options exercisable was \$3.2 million as of June 30, 2018. The aggregate intrinsic value was calculated as the difference between the exercise prices of the underlying stock option awards and the estimated fair value of the common stock on the date of exercise.

Valuation of Stock Options

The fair value of each stock option granted to an employee or a director was estimated as of the date of grant using the Black-Scholes model with the following weighted average assumptions:

| | Six Months Ended June 30, | |
|-------------------------|---------------------------|------------|
| | 2017 | 2018 |
| Dividend yield | — | — |
| Expected term | 6.05 years | 6.07 years |
| Risk-free interest rate | 1.94% | 2.65% |
| Expected volatility | 94% | 89% |

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

The grant date fair value of the Company's common stock used in Black-Scholes model has been determined by the Company's Board of Directors with the assistance of management and an independent third-party valuation specialist. The grant date fair value of the Company's common stock was determined using valuation methodologies which utilizes certain assumptions including probability weighting of events, volatility, time to liquidation, a risk-free interest rate and an assumption for a discount for lack of marketability (Level 3 inputs). In determining the fair value of the Company's common stock, the methodologies used to estimate the enterprise value of the Company were performed using methodologies, approaches, and assumptions consistent with the American Institute of Certified Public Accountants Accounting and Valuation Guide, Valuation of Privately-Held-Company Equity Securities Issued as Compensation ("AICPA Accounting and Valuation Guide").

Additional information related to the status of options at June 30, 2018, is as follows:

| | Options | Weighted Average Exercise Price per Share | Weighted Average Remaining Contractual Life (Years) | Aggregate Intrinsic Value (in thousands) |
|-----------------------------|------------|---|--|---|
| Outstanding | 11,507,414 | \$ 0.22 | 8.89 | \$ 11,429 |
| Exercisable | 2,806,574 | 0.09 | 8.44 | 3,156 |
| Vested and expected to vest | 13,127,309 | 0.19 | 8.66 | 13,449 |

At June 30, 2018, \$3.1 million of total unrecognized compensation cost related to non-vested employee and consultant options is expected to be recognized over a weighted-average period of 2.62. The total fair value of shares vested during the period ended June 30, 2018 was \$0.94 million.

Stock-based compensation expense and awards granted to non-employees was not material for either the six months ended June 30, 2017 or 2018.

Stock-Based Compensation Expense

Total stock-based compensation for all awards granted to employees and consultants, before taxes is as follows (in thousands):

| | Six Months Ended June 30, | |
|-------------------------------------|---------------------------|-----------------|
| | 2017 | 2018 |
| Research and development expenses | \$ 395 | \$ 595 |
| General and administrative expenses | 111 | 578 |
| | <u>\$ 506</u> | <u>\$ 1,173</u> |

Liability for Early Exercise of Stock Options

As of December 31, 2017 and June 30, 2018, there were 3,721,127 and 2,322,556, respectively, of unvested common shares outstanding that were issued upon the early exercise of stock options prior to the vesting of the underlying shares which were subject to repurchase by the Company at the original issuance price upon termination of the stockholders' services. The right to repurchase these shares generally lapses with respect to 25% of the shares underlying the option after one year of service to the Company and 1/48 of the shares underlying the original grant per month for 36 months thereafter. The shares purchased by the employees pursuant to the early exercise of stock options are

Gritstone Oncology, Inc.
Notes to Unaudited Interim Condensed Financial Statements

not deemed, for accounting purposes, to be issued until those shares vest. As of December 31, 2017 and June 30, 2018, the Company recorded \$0.2 million and \$0.1 million, respectively, as short-term and long-term liabilities associated with shares issued subject to repurchase rights.

10. Net Loss and Pro Forma Net Loss Per Share

The following table sets forth the computation of the basic and diluted net loss per share (in thousands, except for per share amounts):

| | Six Months Ended June 30, | |
|---|---------------------------|------------------|
| | 2017 | 2018 |
| Numerator: | | |
| Net loss | \$ (14,557) | \$ (28,848) |
| Denominator: | | |
| Weighted average common shares outstanding, basic and diluted | 13,156,419 | 15,772,769 |
| Net loss per share, basic and diluted | <u>\$ (1.11)</u> | <u>\$ (1.83)</u> |

Since the Company was in a loss position for all periods presented, basic net loss per share is the same as diluted net loss per share for all periods as the inclusion of all potential common shares outstanding would have been anti-dilutive. Potentially dilutive securities that were not included in the diluted per share calculations because they would be anti-dilutive were as follows:

| | June 30, | |
|--|-------------------|--------------------|
| | 2017 | 2018 |
| Series A-1 convertible preferred stock | 25,525,000 | 25,525,000 |
| Series A-2 convertible preferred stock | 35,735,000 | 35,735,000 |
| Series B convertible preferred stock | — | 61,543,319 |
| Series C convertible preferred stock | | 4,761,904 |
| Options issued and outstanding | 8,236,550 | 11,507,414 |
| Early exercised common stock subject to future vesting | 4,617,643 | 2,322,503 |
| Warrants to purchase common stock | 277,778 | — |
| Total | <u>74,391,971</u> | <u>141,395,140</u> |

Pro Forma Net Loss Per Share

The following table sets forth the computation of the Company's pro forma basic and diluted net loss per share (in thousands, except for per share amounts):

| | Six Months Ended June 30, 2018 |
|--|--------------------------------------|
| Net loss | <u>\$ (28,848)</u> |
| Shares used in computing net loss per share, basic and diluted | 15,772,769 |
| Pro forma adjustment to reflect assumed conversion of preferred stock | 122,855,937 |
| Shares used to compute pro forma net loss per share, basic and diluted | <u>138,628,706</u> |
| Pro forma net loss per share, basic and diluted | <u>\$ (0.21)</u> |

Shares

Gritstone Oncology, Inc.

Common Stock



Goldman Sachs & Co. LLC

BTIG

Cowen

Barclays

PART II**Information Not Required in Prospectus****Item 13. Other Expenses of Issuance and Distribution.**

The following table sets forth the costs and expenses, other than the underwriting discounts and commissions, payable by the registrant in connection with the sale of Common Stock being registered. All amounts are estimates except for the Securities and Exchange Commission, or SEC, registration fee, the FINRA filing fee and The Nasdaq Global Market listing fee.

| Item | Amount paid or to be paid |
|---|--------------------------------------|
| SEC registration fee | \$ * |
| FINRA filing fee | * |
| The Nasdaq Global Market Listing fee | * |
| Printing and engraving expenses | * |
| Legal fees and expenses | * |
| Accounting fees and expenses | * |
| Blue Sky, qualification fees and expenses | * |
| Transfer Agent fees and expenses | * |
| Miscellaneous expenses | * |
| Total | \$ * |

* To be completed by amendment.

Item 14. Indemnification of Directors and Officers.

As permitted by Section 102 of the Delaware General Corporation Law, we have adopted provisions in our amended and restated certificate of incorporation and bylaws that limit or eliminate the personal liability of our 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, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to us or our stockholders for monetary damages for 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 payment of dividends; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not affect the availability of equitable remedies such as injunctive relief or rescission. Our amended and restated certificate of incorporation also authorizes us to indemnify our officers, directors and other agents to the fullest extent permitted under Delaware law.

As permitted by Section 145 of the Delaware General Corporation Law, our amended and restated bylaws provide that:

- we may indemnify our directors, officers, and employees to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions;

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- we may advance expenses to our directors, officers and employees in connection with a legal proceeding to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions; and
- the rights provided in our amended and restated bylaws are not exclusive.

Our amended and restated certificate of incorporation, to be attached as Exhibit 3.2 hereto, and our amended and restated bylaws, to be attached as Exhibit 3.4 hereto, provide for the indemnification provisions described above and elsewhere herein. We have entered into separate indemnification agreements with our directors and officers which may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law. These indemnification agreements generally require us, among other things, to indemnify our officers and directors against liabilities that may arise by reason of their status or service as directors or officers, other than liabilities arising from willful misconduct. These indemnification agreements also generally require us to advance any expenses incurred by the directors or officers as a result of any proceeding against them as to which they could be indemnified. In addition, we have purchased a policy of directors' and officers' liability insurance that insures our directors and officers against the cost of defense, settlement or payment of a judgment in some circumstances. These indemnification provisions and the indemnification agreements may be sufficiently broad to permit indemnification of our officers and directors for liabilities, including reimbursement of expenses incurred, arising under the Securities Act of 1933, as amended, or the Securities Act.

The form of Underwriting Agreement, to be attached as Exhibit 1.1 hereto, provides for indemnification by the underwriters of us and our officers who sign this Registration Statement and directors for specified liabilities, including matters arising under the Securities Act.

Item 15. Recent Sales of Unregistered Securities.

The following list sets forth information as to all securities we have sold since our inception on August 5, 2015, which were not registered under the Securities Act.

1. In September 2015, we issued an aggregate of 25,525,000 shares of our Series A convertible preferred stock to 36 accredited investors at a price per share of \$1.00 for aggregate proceeds to us of approximately \$25.5 million.
2. In January 2016, we issued a warrant to purchase 277,776 shares of our common stock at an exercise price of \$0.05 per share, as partial consideration for licenses under a license agreement. In January 2018, the warrant was exercised in full for proceeds to us of approximately \$14,000.
3. In April 2016, we issued an aggregate of 35,735,000 shares of our Series A convertible preferred stock to 36 accredited investors at a price per share of \$1.00 for aggregate proceeds to us of approximately \$35.7 million.
4. In September and October 2017, we issued an aggregate of 61,543,319 shares of our Series B convertible preferred stock to 45 accredited investors at a price per share of \$1.56 for aggregate proceeds to us of approximately \$96.0 million.
5. In June and July 2018, we issued an aggregate of 5,820,105 shares of our Series C convertible preferred stock to 11 accredited investors at a price per share of \$1.89 for aggregate proceeds to us of approximately \$11.0 million.
6. We granted stock options and stock awards to employees, directors and consultants covering an aggregate of 24,976,697 shares of common stock, at a weighted-average exercise price of approximately \$0.40 per share. Of these, options covering an aggregate of 965,981 shares were cancelled without being exercised and 287,813 unvested shares were repurchased concurrent with employee terminations.

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7. We sold an aggregate of 18,952,192 shares of common stock to employees, directors and consultants for cash consideration in the aggregate amount of approximately \$0.4 million pursuant to stock options and stock awards.

We claimed exemption from registration under the Securities Act for the sale and issuance of securities in the transactions described in paragraphs (1) through (5) by virtue of Section 4(a)(2) and/or Regulation D promulgated thereunder as transactions not involving any public offering. All of the purchasers of unregistered securities for which we relied on Section 4(a)(2) and/or Regulation D represented that they were accredited investors as defined under the Securities Act. We claimed such exemption on the basis that (a) the purchasers in each case represented that they intended to acquire the securities for investment only and not with a view to the distribution thereof and that they either received adequate information about the registrant or had access, through employment or other relationships, to such information and (b) appropriate legends were affixed to the stock certificates issued in such transactions.

We claimed exemption from registration under the Securities Act for the sales and issuances of securities in the transactions described in paragraphs (6) and (7) above under Section 4(a)(2) of the Securities Act in that such sales and issuances did not involve a public offering or under Rule 701 promulgated under the Securities Act, in that they were offered and sold either pursuant to written compensatory plans or pursuant to a written contract relating to compensation, as provided by Rule 701.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits.

| <u>Exhibit Number</u> | <u>Exhibit Description</u> | <u>Incorporated by Reference</u> | | | <u>Filed Herewith</u> |
|---------------------------|--|----------------------------------|-------------|---------------|---------------------------|
| | | <u>Form</u> | <u>Date</u> | <u>Number</u> | |
| 1.1* | Form of Underwriting Agreement. | | | | |
| 3.1 | Amended and Restated Certificate of Incorporation, as amended, currently in effect. | DRS/A | 07/06/18 | 3.1 | |
| 3.2* | Form of Amended and Restated Certificate of Incorporation, to be in effect immediately prior to the consummation of this offering. | | | | |
| 3.3 | Bylaws, currently in effect. | DRS/A | 07/06/18 | 3.3 | |
| 3.4* | Form of Amended and Restated Bylaws, to be in effect immediately prior to the consummation of this offering. | | | | |
| 4.1 | Reference is made to Exhibits 3.1 through 3.4. | | | | |
| 4.2* | Form of Common Stock Certificate. | | | | |
| 5.1* | Opinion of Latham & Watkins LLP. | | | | |
| 10.1(a)† | License Agreement, dated as of October 16, 2017, by and among Gritstone Oncology, Inc., Arbutus Biopharma Corporation and its subsidiary Protiva Biotherapeutics Inc. | DRS/A | 07/06/18 | 10.1 | |
| 10.1(b)† | Amendment Number One to License Agreement, dated as of July 20, 2018, by and among Gritstone Oncology, Inc., Arbutus Biopharma Corporation and its subsidiary Protiva Biotherapeutics Inc. | | | | X |

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| Exhibit Number | Exhibit Description | Incorporated by Reference | | | Filed Herewith |
|-------------------|---|---------------------------|----------|---------|-------------------|
| | | Form | Date | Number | |
| 10.2 | Amended and Restated Investors' Rights Agreement dated as of June 29, 2018, by and among Gritstone Oncology, Inc. and the investors listed therein. | DRS/A | 07/06/18 | 10.2 | |
| 10.3 | Lease, dated as of November 11, 2015, by and between Gritstone Oncology, Inc. and Emery Station Joint Venture, LLC. | DRS/A | 07/06/18 | 10.3 | |
| 10.4 | Lease, dated as of February 11, 2016, by and between Gritstone Oncology, Inc. and BMR-Sidney Research Campus LLC. | DRS/A | 07/06/18 | 10.4 | |
| 10.5† | Office Building Net Lease, dated as of March 24, 2017, by and between Gritstone Oncology, Inc. and Hacienda Portfolio Venture, LLC. | DRS/A | 07/06/18 | 10.5 | |
| 10.6(a)# | 2015 Equity Incentive Plan, as amended. | DRS/A | 07/06/18 | 10.6(a) | |
| 10.6(b)# | Form of Stock Option Agreement under 2015 Equity Incentive Plan. | DRS/A | 07/06/18 | 10.6(b) | |
| 10.6(c)# | Form of Early Exercise Stock Option Agreement under 2015 Equity Incentive Plan. | DRS/A | 07/06/18 | 10.6(c) | |
| 10.6(d)# | Form of Stock Purchase Right Grant Notice and Restricted Stock Purchase Agreement under 2015 Equity Incentive Plan. | DRS/A | 07/06/18 | 10.6(d) | |
| 10.7(a)#* | 2018 Incentive Award Plan. | | | | |
| 10.7(b)#* | Form of Stock Option Grant Notice and Stock Option Agreement under the 2018 Incentive Award Plan. | | | | |
| 10.7(c)#* | Form of Restricted Stock Award Agreement under the 2018 Incentive Award Plan. | | | | |
| 10.7(d)#* | Form of Restricted Stock Unit Award Grant Notice under the 2018 Incentive Award Plan. | | | | |
| 10.8#* | 2018 Employee Stock Purchase Plan. | | | | |
| 10.9#* | Employment Agreement by and between Gritstone Oncology, Inc. and Andrew Allen, M.D., Ph.D. | | | | |
| 10.10#* | Employment Agreement by and between Gritstone Oncology, Inc. and Matthew Hawryluk, Ph.D. | | | | |
| 10.11#* | Employment Agreement by and between Gritstone Oncology, Inc. and Karin Jooss, Ph.D. | | | | |
| 10.12#* | Employment Agreement by and between Gritstone Oncology, Inc. and Raphaël Rousseau, M.D., Ph.D. | | | | |
| 10.13#* | Employment Agreement by and between Gritstone Oncology, Inc. and Roman Yelensky, Ph.D. | | | | |
| 10.14#* | Employment Agreement by and between Gritstone Oncology, Inc. and Jean-Marc Bellemin. | | | | |
| 10.15#* | Employment Agreement by and between Gritstone Oncology, Inc. and Jayant Aphale, Ph.D. | | | | |

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| Exhibit Number | Exhibit Description | Incorporated by Reference | | | Filed Herewith |
|----------------|---|---------------------------|------|--------|----------------|
| | | Form | Date | Number | |
| 10.16#* | Employment Agreement by and between Gritstone Oncology, Inc. and Erin Jones. | | | | |
| 10.17#* | Non-Employee Director Compensation Program. | | | | |
| 10.18* | Form of Indemnification Agreement for directors and officers. | | | | |
| 23.1* | Consent of Independent Registered Public Accounting Firm. | | | | |
| 23.2* | Consent of Latham & Watkins LLP (included in Exhibit 5.1). | | | | |
| 24.1* | Power of Attorney. Reference is made to the signature page to the Registration Statement. | | | | |

* To be filed by amendment.

† Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment and this exhibit has been filed separately with the SEC.

Indicates management contract or compensatory plan.

(b) Financial Statement Schedules. Schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

Item 17. Undertakings.

Insofar as indemnification for liabilities arising under the Securities 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 SEC such indemnification is against public policy as expressed in the Securities 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 of whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned Registrant hereby undertakes that:

1. For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this Registration Statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this Registration Statement as of the time it was declared effective.
2. For the purpose of determining any liability under the Securities Act, 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.

The undersigned Registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Signatures

Pursuant to the requirements of the Securities Act of 1933, as amended, 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 Emeryville, California on 2018.

Gritstone Oncology, Inc.

By: _____
Andrew Allen, M.D., Ph.D.
President and Chief Executive Officer

Power of Attorney

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Andrew Allen, M.D., Ph.D. and Jean-Marc Bellemin, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agents, each with full power of substitution, for him or her in any and all capacities, to sign any and all amendments to this Registration Statement, including post-effective amendments or any abbreviated registration statement and any amendments thereto filed pursuant to Rule 462(b) increasing the number of securities for which registration is sought, and to file the same, with all exhibits thereto and other documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, with full power of each to act alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

| <u>Signature</u> | <u>Title</u> | <u>Date</u> |
|------------------------------------|---|-------------|
| _____ Andrew Allen, M.D., Ph.D. | President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i> | , 2018 |
| _____ Jean-Marc Bellemin | Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i> | , 2018 |
| _____ Richard Heyman, Ph.D. | Director | , 2018 |
| _____ Steve Krognnes | Director | , 2018 |
| _____ Judith Li | Director | , 2018 |
| _____ Nicholas Simon | Director | , 2018 |
| _____ Peter Svenilson | Director | , 2018 |
| _____ Thomas Woiwode, Ph.D. | Director | , 2018 |

[***] Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.

AMENDMENT NUMBER ONE TO LICENSE AGREEMENT

This Amendment Number One to License Agreement ("Amendment No. 1") is made by and between (a) Gritstone Oncology, Inc., a Delaware corporation having a place of business at 5858 Horton Street, Suite 210, Emeryville, California 94608, U.S.A. ("Gritstone"), on the one hand, and (b) Protiva Biotherapeutics Inc., a British Columbia corporation with a principal place of business at 100-8900 Glenlyon Parkway, Burnaby, B.C., Canada V5J 5J8 ("Protiva"), and Arbutus Biopharma Corporation, a British Columbia corporation with a principal place of business at 100-8900 Glenlyon Parkway, Burnaby, B.C., Canada V5J 5J8 ("ABUS" and together with Protiva, "Arbutus"), on the other hand. Gritstone, Protiva, and ABUS may each be referred to herein as a "Party" and collectively as the "Parties."

WHEREAS, the Parties entered into the License Agreement, effective on October 16, 2017, (the "Agreement"); and

WHEREAS, the Parties desire to amend certain terms of the Agreement in accordance with this Amendment No. 1, and this Amendment No. 1 shall be effective as of July 20, 2018 (the "Amendment No. 1 Effective Date").

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by the Parties, the Parties, intending to be legally bound, agree as follows:

1. All capitalized terms used herein and not otherwise defined shall have the meanings assigned to such terms in the Agreement.
2. The definition of "Product" shall be deleted and replaced in its entirety with the following definition:

"Product" means a product containing [***] RNA that encodes [***] TSNA and that is formulated in an Arbutus LNP; *provided* that such RNA is part of a Self-Replicating RNA System and is not a non-replicating messenger RNA ("mRNA").

3. In the event of any discrepancies or conflicting terms between this Amendment No. 1 and the Agreement, the terms of this Amendment No. 1 shall control.
4. The Agreement and this Amendment No. 1 represent the complete and entire understanding between the Parties regarding the subject matter hereof and supersedes all prior negotiations, representations or agreements, either written or oral, regarding this subject matter.
5. This Amendment No. 1 shall be governed and interpreted in accordance with the substantive laws of the State of New York, excluding its conflicts of laws principles.

6. Arbutus hereby represents, warrants, and covenants to Gritstone that: (a) as of the Amendment No. 1 Effective Date, it is entitled to grant the rights and licenses granted to Gritstone under the Agreement as amended by this Amendment No. 1, and is not currently bound by any agreement with any Third Party, or by any outstanding order, judgment, or decree of any court or administrative agency, that restricts it in any way from granting to Gritstone the rights and licenses as set forth in the Agreement as amended by this Amendment No. 1; and (b) neither Arbutus nor any of its Affiliates has assigned, transferred, conveyed or otherwise encumbered, nor during the Term shall assign, transfer, license, convey or otherwise encumber, its right, title and interest in the Arbutus Patents, Confidential Information and other Licensed Intellectual Property either owned by or exclusively licensed to Arbutus as of the Effective Date in a manner that conflicts with any rights granted to Gritstone under the Agreement as amended by this Amendment No. 1.
7. This Amendment No. 1 may be executed in counterparts, each of which shall be deemed an original and, together, one and the same instrument. A facsimile, PDF or any other copy of this Amendment No. 1 signed by a Party is binding upon the signing Party to the same extent as the original of the signed Amendment No. 1, and may be delivered electronically.
8. Except for the matters set forth in this Amendment No. 1, all other terms of the Agreement shall remain unchanged and in full force and effect.

[Signature Page Follows]

IN WITNESS WHEREOF, authorized representatives of Gritstone, ABUS and Protiva have executed and delivered this Amendment No. 1 effective as of the Amendment No. 1 Effective Date.

GRITSTONE ONCOLOGY, INC.

By: /s/ Andrew R. Allen
Name: Andrew R. Allen
Title: President and CEO

PROTIVA BIOTHERAPEUTICS INC.

By: /s/ Mark J Murray
Name: Mark J Murray
Title: President and CEO

By: _____
Name: _____
Title: _____

ARBUTUS BIOPHARMA CORPORATION

By: /s/ Mark J Murray
Name: Mark J Murray
Title: President and CEO

By: _____
Name: _____
Title: _____

*** Certain information in this document has been omitted and filed separately with the Securities and Exchange Commission. Confidential treatment has been requested with respect to the omitted portions.