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Table of Contents

Index to Financial Statements

Filed Pursuant to Rule 424(b)(4)
Registration No. 333-233365

PROSPECTUS

10,937,500 Shares

Common Stock

We are offering 10,937,500 shares of our common stock. This is our initial public offering, and no public market currently exists for our common stock. The initial public offering price is $16.00 per share. Our common stock has been approved for listing on the Nasdaq Global Select Market under the symbol “IGMS”.

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

We have two classes of common stock: the voting common stock offered hereby and non-voting common stock. For a description of the rights of the voting common stock and non-voting common stock, please see “Description of Capital Stock” beginning on page 147 of this prospectus. We are offering voting common stock in this offering, and unless otherwise noted, all references in this prospectus to our “common stock” or “common shares” refers to our voting common stock.

Investing in our common stock involves a high degree of risk. Please read “Risk Factors” beginning on page 11 of this prospectus.

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

	PER SHARE	TOTAL
Initial Public Offering Price	$ 16.00	$175,000,000
Underwriting Discounts and Commissions (1)	$ 1.12	$ 12,250,000
Proceeds to IGM Biosciences, Inc. before expenses	$ 14.88	$162,750,000

(1) See “Underwriting” beginning on page 159 for additional information regarding underwriter compensation.

Delivery of the shares of common stock is expected to be made on or about September 20, 2019. We have granted the underwriters an option for a period of 30 days to purchase an additional 1,640,625 shares of our common stock. If the underwriters exercise the option in full, the total underwriting discounts and commissions payable by us will be $14,087,500, and the total proceeds to us, before expenses, will be $187,162,500.

Jefferies **Piper Jaffray** **Stifel** **Guggenheim Securities**

Prospectus dated September 17, 2019

Table of Contents

Index to Financial Statements

TABLE OF CONTENTS

Table of Contents

Index to Financial Statements

Through and including October 12, 2019 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to a dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

We and the underwriters have not authorized anyone to provide you any information other than that contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the underwriters are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus is accurate only as of the date of this prospectus unless the information specifically indicates that another date applies, regardless of the time of delivery of this prospectus or of any sale of the shares of common stock offered hereby. Our business, financial condition, results of operations and prospects may have changed since that date.

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

Table of Contents

Index to Financial Statements

PROSPECTUS SUMMARY

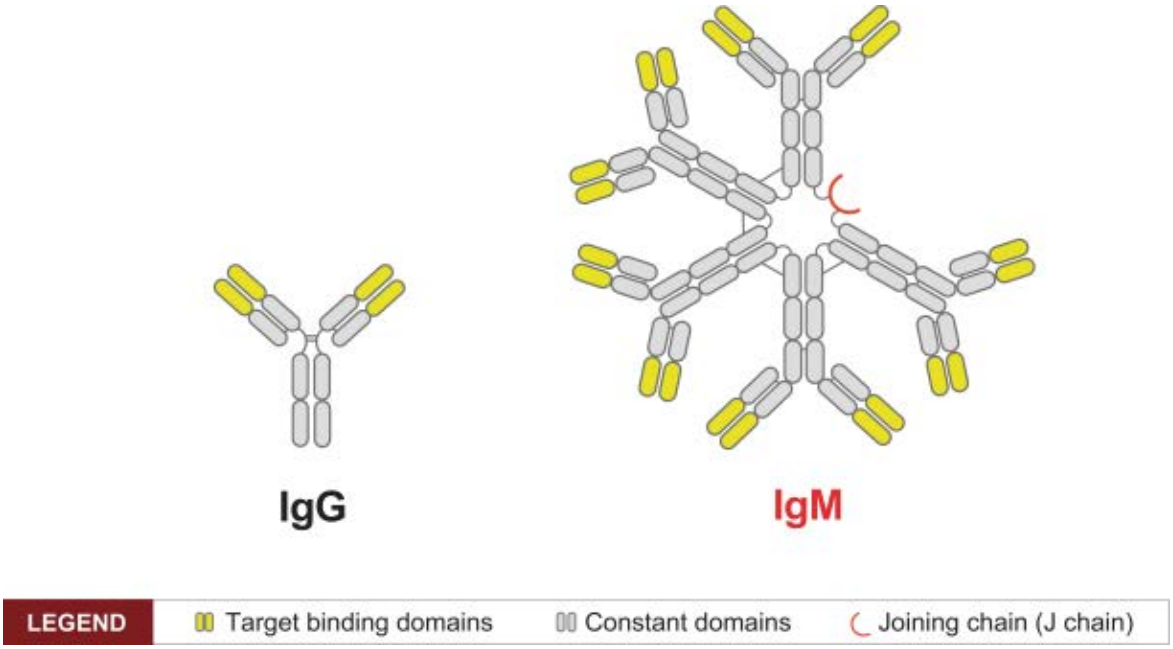
This summary highlights selected information contained elsewhere in this prospectus and is qualified in its entirety by the more detailed information and financial statements included elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our common stock. You should carefully read this entire prospectus, including the information under the sections titled "Risk Factors," "Special Note Regarding Forward-Looking Statements" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes included elsewhere in this prospectus, before making an investment decision. Unless the context requires otherwise, references in this prospectus to "IGM Biosciences," "IGM," the "Company," "we," "us" and "our" refer to IGM Biosciences, Inc.

Overview

We are a biotechnology company pioneering the development of engineered IgM antibodies for the treatment of cancer patients. IgM antibodies have inherent properties that we believe may enable them to bind more strongly to cancer cells than comparable IgG antibodies. We have created a proprietary IgM antibody technology platform that we believe is particularly well suited for developing T cell engagers, receptor cross-linking agonists and targeted cytokines. Our lead product candidate, IGM-2323, is a bispecific T cell engaging IgM antibody targeting CD20 and CD3 proteins, and we intend to dose the first patient in a Phase 1 clinical trial for the treatment of relapsed/refractory B cell Non-Hodgkin's lymphoma (NHL) patients in 2019. Our second product candidate will be an IgM antibody targeting Death Receptor 5 (DR5) proteins, and we plan to file an investigational new drug application (IND) for the treatment of patients with solid and hematologic malignancies in 2020. We believe that we have the most advanced research and development program focused on engineered therapeutic IgM antibodies. We have created a portfolio of patents and patent applications, know-how and trade secrets directed to our platform technology, product candidates and manufacturing capabilities, and we retain worldwide commercial rights to all of our product candidates and the intellectual property related thereto.

Immunoglobulin G (IgG) and Immunoglobulin M (IgM) are classes of antibodies that are naturally produced by the human immune system and are distinguishable by their structural properties.

Structural Comparison of IgG and IgM Antibodies



IgM antibodies have 10 binding domains compared to 2 for IgG antibodies. This inherent biological advantage enables:

- Stronger binding to cell surface targets, including those with low expression levels, which may result in better and more complete targeting of cancer cells;
- Stronger binding to difficult targets, such as tumor associated carbohydrates and glycosylated proteins, which has the potential to expand the range of addressable cancer targets;
- Greater ability to cross-link cell surface receptors, which may significantly enhance cellular signaling for killing cancer cells or stimulating T cells, which are a type of white blood cell that are an essential part of the immune system; and
- Substantially greater ability to utilize the complement dependent cytotoxicity (CDC) mechanism of killing targeted cells, which kills cancer cells without requiring the presence of immune cells.

Despite these inherent biological advantages, while IgG antibodies have been broadly developed as therapeutics for cancer, we believe the therapeutic potential of engineered IgM antibodies has remained largely unexplored.

Our Platform

We created our IgM platform to expand upon the inherent properties of IgM antibodies and to allow for the rapid development of engineered therapeutic antibodies. Significantly, our IgM platform allows us to create IgM antibodies with higher affinity and avidity than naturally occurring IgM antibodies. We believe our platform also allows us to utilize the strong and durable binding of IgM antibodies to kill cancer cells with T cells, induce programmed death of cancer cells or deliver immune stimulating cytokines to the region of the bound cell.

The versatility of our IgM platform positions us to evaluate multiple approaches to treat patients with solid and hematologic malignancies. Our ability to develop engineered IgM antibodies against various targets allows for the creation of a broad and differentiated product pipeline. Our initial efforts are focused on three broad applications of IgM antibodies:

- **T cell engagers:** T cell to cancer cell engagement, including CD20 x CD3, CD123 x CD3, CD38 x CD3 and solid tumor target x CD3 programs, which we believe may have the potential to kill cancer cells through T cell directed cellular cytotoxicity (TDCC) and CDC while maintaining a favorable tolerability profile.
- **Receptor cross-linking agonists:** Tumor Necrosis Factor receptor Superfamily (TNFrSF) agonists, including DR5, which induces programmed death of cancer cells, as well as OX40, glucocorticoid-induced TNFr-related protein (GITR) and other TNFrSF members, which we believe may enhance the ability of the immune system to fight cancer.
- **Targeted cytokines:** Targeted cytokine delivery, including interleukin-15 (IL-15), which we believe may be helpful in inducing and maintaining immune responses to cancer.

Our Pipeline

Our lead product candidate, IGM-2323, is a CD20 x CD3 bispecific IgM antibody for the treatment of patients with CD20-positive cancer. CD20 is a protein commonly expressed on the surface of NHL cells and chronic lymphocytic leukemia (CLL) cells, while CD3 is a protein expressed on the surface of T cells. IGM-2323 contains 10 binding domains for CD20 and one binding domain for CD3. In our preclinical studies, IGM-2323 strongly bound to CD20-positive cancer cells and induced potent T cell dependent and complement dependent cancer cell death, including those cells with low levels of CD20. In addition, we observed lower cytokine release with IGM-2323 relative to comparable IgG bispecific T cell engaging antibodies in our preclinical studies, which may result in reduced risk of the serious adverse effects of cytokine release syndrome (CRS). We plan to begin evaluating IGM-2323 in a Phase 1 clinical trial in relapsed/refractory B cell NHL patients, which is B cell NHL that has either not responded to initial treatment or responded to treatment but then returns, in 2019. Treatment with combination chemo-immunotherapy, such as with rituximab-based regimens, or high

dose chemotherapy and bone marrow transplant, is generally effective and may cure approximately 50-70% of patients with aggressive B cell NHL. Indolent B cell NHL, which represents approximately 40% of B cell NHL cases, remains mostly incurable at advanced stages with current therapies.

Our second product candidate will be an IgM antibody targeting DR5 for the treatment of patients with solid and hematologic malignancies. DR5 receptors are expressed on a broad range of solid tumors as well as leukemias and lymphomas, but their intracellular apoptotic signaling requires efficient cross-linking of at least three DR5 receptors. Our DR5 IgM antibodies demonstrated significantly enhanced apoptotic signaling compared to an IgG antibody with the same binding domains, resulting in >1,000 fold increased potency in killing cancer cells from multiple cancer cell types in our studies outside of living organisms (*in vitro*) studies. In our preliminary studies in living organisms (*in vivo*), specifically cynomolgus monkeys, no untoward toxicity was observed with our DR5 IgM antibodies. We expect to file an IND for a DR5 IgM antibody in 2020.

The following table highlights our lead programs:

Mode	Target	Indication	Phase of Development					Worldwide Commercial Rights	Anticipated Milestone
			Discovery	Preclinical	Phase 1	Phase 2	Phase 3		
T cell Engager	IGM-2323 (CD20x CD3)	NHL and CLL						igm	Initial Phase 1 data for r/r B cell NHL: 2020
Receptor Cross-linking Agonist	IgM Antibody (DR5)	Solid and Hematologic Malignancies						igm	IND filing: 2020

The following table highlights discovery programs that we are prioritizing:

Mode	Target	Indication	Worldwide Commercial Rights
T cell Engagers	CD123 x CD3	Acute Myeloid Leukemia	igm
	CD38 x CD3	Multiple Myeloma	
	Multiple Targets x CD3	Multiple Solid Tumors	
Receptor Cross-linking Agonists	OX40	Solid and Hematologic Malignancies	igm
	GITR		
Targeted Cytokines	Multiple Targets x IL-15	Solid and Hematologic Malignancies	igm

We estimate that these discovery programs are at least two years away from clinical studies, assuming they meet our requirements for advancement. We do not anticipate advancing all of these programs into clinical testing, and some of these programs may be supplanted by other IgM discovery programs.

Our Team

Our management team and board of directors have decades of biotechnology experience and perspective in areas such as cancer biology, immunotherapy, immunology, antibody discovery, protein engineering and clinical development. They bring a strong history of leadership, innovation and research and development experience at leading companies, including Roche/Genentech, Amgen, Gilead Sciences, Celgene, Millennium Pharmaceuticals, Shire, Kite Pharma, Bavarian Nordic, Sutro Biopharma and Northern Biologics. Members of our team were involved in the discovery, development or commercialization of multiple therapeutics, including Tecentriq, Yescarta, Zydelig, Avastin, Lucentis, Vectibix, Activase, TNKase and Kogenate. Our team is further supported by a strong group of investors that share our commitment to developing IgM antibodies for the treatment of cancer patients. Since 2010, we have raised approximately $162.0 million through convertible

Table of Contents

Index to Financial Statements

preferred stock financings. Our key investors include Haldor Topsøe Holding A/S (HTH), a global leader in catalysis and chemical process technology, and leading institutional investors, Baker Brothers, Redmile Group, Janus Henderson Investors and Vivo Capital.

Our Strategy

Our strategy is to sustain and extend our global leadership in the development of engineered IgM antibodies for therapeutic use. We plan to achieve this by utilizing our proprietary IgM technology to develop antibodies with differentiated product profiles and the ability to address difficult to treat patients with cancers and other serious diseases. This strategy encompasses the following key elements:

- Advance IGM-2323 through clinical development in B cell NHL to establish our IgM platform as the leading CD3 T cell engaging technology.
- Progress a DR5 IgM antibody into clinical trials to establish the efficacy of our IgM antibodies in targeting members of the TNFrSF.
- Utilize our proprietary T cell engaging and immune stimulating technologies to expand our pipeline of IgM antibody product candidates.
- Build antibody manufacturing capabilities to support our future clinical trials and provide commercial supply for any approved product candidates.
- Directly commercialize any approved product candidates in key markets alone or with strategic partners.
- Continue to expand our intellectual property portfolio to further protect our IgM platform and our product candidates.

We believe that if we are successful in bringing an IgM antibody to market, particularly one that is more effective and safer than comparable IgG antibodies, we will significantly alter the course of future therapeutic antibody development.

Risks Associated with Our Business

Our business is subject to numerous risks and uncertainties, including those discussed more fully in the section titled “Risk Factors.” These risks include, but are not limited to, the following:

- We are early in our development efforts and all of our product candidates are in preclinical development or early stage clinical development. If we are unable to advance our product candidates through clinical development, obtain regulatory approval and commercialize one or more of our product candidates, our business will be materially adversely affected and we may never generate any product revenue.
- The use of engineered IgM antibodies is a novel and unproven therapeutic approach and our development of IGM-2323, our DR5 IgM antibody and our discovery programs may never lead to a marketable product.
- Clinical trials are expensive, time consuming and difficult to design and implement and may fail to demonstrate adequate safety and efficacy of our product candidates. Furthermore, the results of previous preclinical studies and clinical trials may not be predictive of future results, and the results of our current and planned clinical trials may not satisfy the requirements of the FDA or comparable foreign regulatory authorities or provide the basis for regulatory approval.
- If clinical trials for our product candidates are prolonged, delayed or stopped, we may be unable to seek or obtain regulatory approval and commercialize our product candidates on a timely basis, or at all, which would require us to incur additional costs and delay our receipt of any product revenue.
- If we experience delays or difficulties in the enrollment of patients in clinical trials, including as a result of competition for patients, we will be unable to complete these trials on a timely basis, if at all.
- Our product candidates may have undesirable side effects that may delay or prevent marketing approval or, if approval is received, require them to be taken off the market, require them to include new safety warnings, contraindications or precautions, or otherwise limit their sales. No regulatory

Table of Contents

Index to Financial Statements

agency has made a determination that any of our product candidates are safe or effective for use by the general public for any indication.

- We face significant competition from entities that have developed or may develop product candidates for the treatment of diseases that we are initially targeting, including companies developing novel treatments and technology platforms. If our competitors develop and market products that are more effective, safer or less expensive than our product candidates, our commercial opportunities will be negatively impacted.
- The manufacturing of our product candidates is complex. We and our third-party manufacturers may encounter difficulties in production. If we encounter any such difficulties, our ability to supply our product candidates for clinical trials or, if approved, for commercial sale, could be delayed or halted entirely.
- We may not be successful in our efforts to use and expand our IgM platform to build a pipeline of product candidates.
- Our future success depends on our ability to retain key executives and to attract, retain and motivate qualified personnel.
- We have incurred significant losses since inception and anticipate that we will continue to incur losses for the foreseeable future. We have no products approved for commercial sale, and to date we have not generated any revenue or profit from product sales. We may never achieve or sustain profitability.
- Even if this offering is successful, we will require substantial additional funding, which may not be available to us on acceptable terms, or at all, and, if not available, may require us to delay, scale back or cease our product development programs or operations.
- Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties. In addition, if we are unable to obtain, maintain and enforce patent and trade secret protection for our product candidates and related technology, our business could be materially harmed.

Corporate Information

We were incorporated in Delaware in 1993 under the name Palingen, Inc. From 1993 to 2010, we were principally engaged in research related to naturally occurring IgM antibodies. In 2010, we received an initial equity investment from Haldor Topsøe Holding A/S (HTH), our current majority stockholder, changed our name to IGM Biosciences, Inc. and refocused our research and development efforts toward developing our IgM platform and engineering new IgM antibodies. In December 2017, we established a Danish holding company–IGM Biosciences A/S (Holdco); in April 2019, we dissolved Holdco. The capitalization information included in this prospectus is consistently presented as that of IGM Biosciences, Inc., even during the interim period when we had a holding company structure and our investors held their equity interests in Holdco.

Our principal executive offices are located at 325 E. Middlefield Road, Mountain View, California 94043, and our telephone number is (650) 965-7873. Our website address is www.igmbio.com. Information contained on, or that can be accessed through, our website is not incorporated by reference in this prospectus.

IGM Biosciences, the IGM logo and our other registered or common law trademarks, trade names or service marks appearing in this prospectus are owned by us. This prospectus contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, generally appear without the ® or TM symbols, but such 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 rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

Emerging Growth Company Status

We qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012 (JOBS Act).

Table of Contents

Index to Financial Statements

An emerging growth company may take advantage of certain reduced reporting requirements that are otherwise applicable to public companies. These provisions include, but are not limited to:

- being permitted to present only two years of audited financial statements in addition to any required unaudited interim financial statements, with correspondingly reduced disclosure in the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations”;
- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (the Sarbanes-Oxley Act);
- reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports, proxy statements and registration statements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and any golden parachute payments.

We will remain an emerging growth company until the earlier of (i) the last day of our first fiscal year (a) following the fifth anniversary of the completion of this offering, (b) in which we have total annual gross revenues 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 under the rules of the U.S. Securities and Exchange Commission and (ii) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

We have elected to take advantage of certain of the reduced disclosure obligations in this prospectus and the registration statement of which this prospectus is a part, and we may elect to take advantage of other reduced reporting requirements in future filings. As a result, the information that we provide to our stockholders may be different than, and not comparable to, information presented by other public reporting companies.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. We have elected to use this extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements may not be comparable to companies that comply with the new or revised accounting standards as of public company effective dates.

Table of Contents

Index to Financial Statements

The Offering

Common stock offered	10,937,500 shares
Underwriters' option to purchase additional shares of common stock	1,640,625 shares
Total common stock and non-voting common stock to be outstanding immediately after this offering	28,891,945 shares (of which 22,460,740 shares will be common stock) or 30,532,570 shares (of which 24,101,365 shares will be common stock) if the underwriters exercise their option to purchase additional shares in full
Use of proceeds	We estimate that our net proceeds from this offering of common stock will be approximately $158.6 million (or approximately $183.0 million if the underwriters exercise their option to purchase additional shares in full), based upon the initial public offering price of $16.00 per share and after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We expect to use the net proceeds from this offering, together with our existing cash and cash equivalents, to fund: (i) the clinical development of IGM-2323 for the treatment of relapsed/refractory B cell NHL patients; (ii) IND-enabling studies and the clinical development of our DR5 IgM antibody; (iii) our ongoing efforts to develop additional clinical candidates from our IgM platform; and (iv) the build out and expansion of our manufacturing facilities, as well as for working capital and other general corporate purposes. See the section of this prospectus titled "Use of Proceeds."
Risk factors	See the section of this prospectus titled "Risk Factors" beginning on page 11 and other information included in this prospectus for a discussion of factors you should carefully consider before deciding to invest in shares of our common stock.
Nasdaq Global Select Market trading symbol	"IGMS"

The number of shares of common stock and non-voting common stock that will be outstanding following this offering is based on 11,523,240 shares of common stock outstanding and 6,431,205 shares of non-voting common stock outstanding as of June 30, 2019 (including convertible preferred stock on an as-converted basis as well as 3,026,449 shares of our Series C convertible preferred stock issued after June 30, 2019 and 116,518 shares of restricted common stock subject to forfeiture), and excludes:

- 595,832 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2010 Stock Plan (2010 Plan) as of June 30, 2019, with a weighted-average exercise price of $0.94 per share;
- 1,333,451 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2018 Omnibus Incentive Plan (2018 Plan) as of June 30, 2019, with a weighted-average exercise price of $1.39 per share;

Table of Contents

Index to Financial Statements

- 185,063 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2018 Plan after June 30, 2019, with a weighted-average exercise price of $10.24 per share;
- 2,703,702 shares of common stock reserved for future issuance under our 2018 Plan (which does not include an aggregate of 157,703 shares of common stock issuable upon the exercise of stock options that were granted on the effective date of the registration statement of which this prospectus forms a part at an exercise price equal to the initial public offering price of our common stock), including the amendment thereto that became effective in connection with this offering, and any additional shares that become available under our 2018 Plan pursuant to provisions thereof that automatically increase the share reserve under the plan each year; and
- 280,000 shares of common stock reserved for future issuance under our 2019 Employee Stock Purchase Plan (ESPP), which became effective in connection with this offering, and any additional shares that become available under our ESPP pursuant to provisions thereof that automatically increase the share reserve under the plan each year.

In addition, unless we specifically state otherwise, all information in this prospectus assumes:

- the automatic conversion of all outstanding shares of our convertible preferred stock (including 3,026,449 shares of our Series C convertible preferred stock issued after June 30, 2019) into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock, which will occur immediately prior to the completion of this offering pursuant to the terms of our amended and restated certificate of incorporation;
- no exercise of outstanding stock options;
- no exercise by the underwriters of their option to purchase additional shares of common stock; and
- the filing and effectiveness of our amended and restated certificate of incorporation and the adoption of our amended and restated bylaws, each of which will occur immediately prior to the completion of this offering.

On August 30, 2019, we effected a 6.6084-for-1 reverse stock split of our common stock, non-voting common stock and convertible preferred stock. This prospectus gives retroactive effect to the split for all periods presented.

Certain of our directors and existing stockholders, including certain stockholders affiliated with our directors and that beneficially own more than 5% of our outstanding capital stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price. The underwriters will receive the same underwriting discounts and commissions on the shares purchased by these directors and stockholders as they will on the other shares sold to the public in this offering.

Table of Contents

Index to Financial Statements

Summary Financial Data

The following tables set forth a summary of our financial data as of and for the periods ended on the dates indicated. We have derived the summary statements of operations data for the years ended December 31, 2017 and 2018 from our audited financial statements included elsewhere in this prospectus. The summary statements of operations data for the six months ended June 30, 2018 and 2019, and the summary balance sheet data as of June 30, 2019, have been derived from our unaudited interim condensed financial statements included elsewhere in this prospectus. The unaudited interim condensed financial statements were prepared on the same basis as our audited financial statements and reflect, in the opinion of management, all adjustments, which include only normal, recurring adjustments that are necessary to present fairly the results for the interim periods presented. Our historical results are not necessarily indicative of the results that may be expected in any future period. You should read this data together with the information in the sections titled “Selected Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes included elsewhere in this prospectus.

	YEAR ENDED DECEMBER 31,		SIX MONTHS ENDED JUNE 30,	
	2017	2018	2018	2019
	(in thousands, except share and per share amounts)		(Unaudited)	
Statements of Operations Data:				
Operating expenses:				
Research and development	$ 8,639	$ 18,962	$ 5,976	$ 14,215
General and administrative	2,508	3,829	1,224	3,673
Total operating expenses	11,147	22,791	7,200	17,888
Loss from operations	(11,147)	(22,791)	(7,200)	(17,888)
Other income (expense), net	93	80	59	(258)
Net loss	$ (11,054)	$ (22,711)	$ (7,141)	$ (18,146)
Net loss per share, basic and diluted (1)	$ (25.24)	$ (51.84)	$ (16.30)	$ (36.17)
Weighted-average common shares outstanding, basic and diluted (1)	437,942	438,074	438,074	501,716
Pro forma net loss per share, basic and diluted (unaudited) (1)		$ (3.07)		$ (1.80)
Pro forma weighted-average common and non-voting common shares outstanding, basic and diluted (unaudited) (1)		7,395,000		10,081,088

(1) See Note 10 to our financial statements and Note 9 to our unaudited condensed financial statements included elsewhere in this prospectus for an explanation of the method used to calculate historical and pro forma net loss per share, basic and diluted, and the weighted-average number of shares used in the computation of the per share amounts.

Table of Contents

Index to Financial Statements

	AS OF JUNE 30, 2019		
	ACTUAL	PRO FORMA (1)	PRO FORMA AS ADJUSTED (2)
		(unaudited) (in thousands)	
Balance Sheet Data:			
Cash and cash equivalents	$ 42,672	$ 82,672	$ 241,344
Total assets	48,517	88,431	245,103
Accrued liabilities	4,048	4,048	2,170
Total liabilities	6,701	6,701	4,823
Convertible preferred stock	122,785	—	—
Accumulated deficit	(82,218)	(82,218)	(82,218)
Total stockholders' (deficit) equity	(80,969)	81,730	240,280

(1) The pro forma balance sheet data above reflects (i) the issuance of 3,026,449 shares of our Series C convertible preferred stock and related gross proceeds of $40.0 million subsequent to June 30, 2019 and (ii) the automatic conversion of all outstanding shares of our convertible preferred stock (including the shares referenced in (i)) into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock as if such conversion had occurred on June 30, 2019.

(2) The pro forma as adjusted balance sheet data gives effect to (i) the pro forma adjustments set forth in footnote (1) above and (ii) the issuance and sale of 10,937,500 shares of common stock in this offering at the initial public offering price of $16.00 per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

Table of Contents

Index to Financial Statements

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the following risks and uncertainties, together with all of the other information contained in this prospectus, including our financial statements and related notes included elsewhere in this prospectus, before making an investment decision. The risks described below are not the only ones facing us. The occurrence of any of the following risks, or of additional risks and uncertainties not presently known to us or that we currently believe to be immaterial, could materially and adversely affect our business, financial condition or results of operations. In such case, the trading price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to Our Business and the Development and Commercialization of Our Product Candidates

We are early in our development efforts and all of our product candidates are in preclinical development or early stage clinical development. If we are unable to advance our product candidates through clinical development, obtain regulatory approval and commercialize one or more of our product candidates, our business will be materially adversely affected and we may never generate any product revenue.

We are early in our development efforts and have not yet completed the development of any of our product candidates. As a result, we are not currently permitted to market or sell any of our product candidates in any country, and we may never be able to do so in the future. We have a limited number of product candidates and discovery programs, all of which are in preclinical development or early stage clinical development. We have not commenced or completed any clinical trials, and we have not received marketing approval, for any of our product candidates. Our product candidates will require clinical development, evaluation of preclinical, clinical and manufacturing activities, marketing approval from government regulators, substantial investment and significant marketing efforts before we generate any revenues from product sales, if ever. We have limited experience in conducting and managing the clinical trials necessary to obtain regulatory approvals. Our ability to generate product revenue and achieve and sustain profitability depends on, among other things, obtaining regulatory approvals for our product candidates. Obtaining regulatory approval of our product candidates will depend on many factors, including, but not limited to, the following:

- completing process development, manufacturing and formulation activities;
- initiating, enrolling patients in and completing clinical trials of product candidates on a timely basis;
- developing and maintaining adequate manufacturing capabilities either by ourselves or in connection with third-party manufacturers; and
- demonstrating with substantial evidence the efficacy, safety and tolerability of product candidates to the satisfaction of the FDA or any comparable foreign regulatory authority for marketing approval.

Many of these factors are wholly or partially beyond our control, including clinical advancement, the regulatory submission process and changes in the competitive landscape. If we do not achieve one or more of these factors in a timely manner, we could experience significant delays or an inability to develop product candidates at all, and our business will be materially adversely affected.

The use of engineered IgM antibodies is a novel and unproven therapeutic approach and our development of IGM-2323, our DR5 IgM antibody and our discovery programs may never lead to a marketable product.

Our product candidates are based on engineered IgM antibody approaches that differ from current antibody therapies and are unproven. Our IgM antibodies ultimately may not be as safe or effective as IgG antibodies that have been approved or may in the future be approved by the FDA. Further, we are not aware of any therapeutic IgM antibodies that have been approved by the FDA. The scientific evidence to support the feasibility of developing our product candidates and discovery programs is both preliminary and limited. We may ultimately discover that our product candidates and discovery programs do not possess some of the properties that are necessary for therapeutic efficacy, and we may also discover that they do not possess those characteristics that we believe may be helpful for therapeutic effectiveness, including stronger binding that increases efficacy. Our IgM antibodies may also have significant undesirable characteristics, such as immunogenicity, which would limit their ability to be developed as effective and safe therapeutics. In addition, we may discover that our IgM antibodies are not as safe as IgG antibodies.

Table of Contents

Index to Financial Statements

We may not succeed in demonstrating safety and efficacy of these product candidates or discovery programs in clinical trials, notwithstanding results in preclinical studies. As a result, we may never succeed in developing a marketable product. We may discover that the half-life, tissue distribution or other pharmacodynamic or pharmacokinetic characteristics of our IgM antibodies render them unsuitable for the therapeutic applications we have chosen or are not competitive with IgG antibodies. We may also experience manufacturing, formulation or stability problems with one or more of our IgM antibodies which may render them unsuitable for use as therapeutic drug products.

The FDA has limited experience with IgM antibody-based therapeutics, which may increase the complexity, uncertainty and length of the regulatory approval process for our product candidates. For example, the FDA may require us to provide additional data to support our regulatory applications. 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 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 subject to post-marketing testing requirements to maintain regulatory approval. In addition, upon obtaining any marketing approvals, we may have difficulty in establishing the necessary sales and marketing capabilities to gain market acceptance.

Moreover, advancing IGM-2323, our DR5 IgM antibody and our discovery programs as novel products creates other significant challenges for us, including educating medical personnel regarding a novel class of engineered antibody therapeutics and their potential efficacy and safety benefits, as well as the challenges of incorporating our product candidates, if approved, into treatment regimens.

If any of our product candidates prove to be ineffective, unsafe or commercially unviable, our entire pipeline could have little, if any, value, and it may prove to be difficult or impossible to finance the further development of our pipeline. Any of these events would have a material and adverse effect on our business, financial condition, results of operations and prospects.

Clinical trials are expensive, time consuming and difficult to design and implement and may fail to demonstrate adequate safety and efficacy of our product candidates. Furthermore, the results of previous preclinical studies and clinical trials may not be predictive of future results, and the results of our current and planned clinical trials may not satisfy the requirements of the FDA or comparable foreign regulatory authorities or provide the basis for regulatory approval.

Before obtaining marketing approval from regulatory authorities for the sale of our product candidates, we must conduct preclinical development and then extensive clinical trials to demonstrate their safety and efficacy. Clinical testing is expensive and difficult to design and implement. Clinical testing can take many years to complete, and its ultimate outcome is uncertain.

A failure of one or more clinical trials can occur at any stage of the process. We will be required to demonstrate with substantial evidence through well-controlled clinical trials that our product candidates are safe and effective for use in a diverse patient population before we can seek regulatory approvals for their commercial sale. Our clinical trials may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional and expansive preclinical or clinical testing.

Positive or timely results from preclinical or early-stage trials do not ensure positive or timely results in future clinical trials or registrational clinical trials because product candidates in later-stage clinical trials may fail to demonstrate sufficient safety and efficacy to the satisfaction of the FDA and comparable foreign regulatory authorities, despite having progressed through preclinical studies or initial clinical trials. Product candidates that have shown promising results in early clinical trials may still suffer significant setbacks in subsequent clinical trials or registration clinical trials. For example, a number of companies in the pharmaceutical industry, including those with greater resources and experience than us, have suffered significant setbacks in advanced clinical trials, even after obtaining promising results in earlier clinical trials.

Interim or preliminary data from clinical trials that we may conduct may not be indicative of the final results of the trial and are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data becomes available. Interim or preliminary data also remains subject to

audit and verification procedures that may result in the final data being materially different from the interim or preliminary data. As a result, interim or preliminary data should be viewed with caution until the final data are available.

We do not know whether any clinical trials we may conduct will demonstrate consistent or adequate efficacy and safety sufficient to obtain marketing approval to market our product candidates.

If clinical trials for our product candidates are prolonged, delayed or stopped, we may be unable to seek or obtain regulatory approval and commercialize our product candidates on a timely basis, or at all, which would require us to incur additional costs and delay our receipt of any product revenue.

We intend to dose the first patient in a Phase 1 clinical trial of IGM-2323, our lead product candidate, for the treatment of relapsed/refractory B cell NHL patients in 2019, and we expect to file an IND for our second product candidate, an IgM antibody targeting DR5, for the treatment of patients with solid and hematological malignancies in 2020. We may experience delays in our ongoing or future preclinical studies or clinical trials, and we do not know whether future preclinical studies or clinical trials will begin on time, need to be redesigned, enroll an adequate number of patients on time or be completed on schedule, if at all. The commencement or completion of these clinical trials could be substantially delayed or prevented by many factors, including:

- further discussions with the FDA or comparable foreign regulatory authorities regarding the scope or design of our clinical trials;
- the limited number of, and competition for, suitable study sites and investigators to conduct our clinical trials, many of which may already be engaged in other clinical trial programs with similar patients, including some that may be for the same indication as our product candidates;
- any delay or failure to obtain timely approval or agreement to commence a clinical trial in any of the countries where enrollment is planned;
- inability to obtain sufficient funds required for a clinical trial;
- clinical holds on, or other regulatory objections to, a new or ongoing clinical trial;
- delay or failure to manufacture sufficient supplies of the product candidate for our clinical trials;
- delay or failure to reach agreement on acceptable clinical trial agreement terms or clinical trial protocols with prospective sites or clinical research organizations (CROs), the terms of which can be subject to extensive negotiation and may vary significantly among different sites or CROs;
- delay or failure to obtain institutional review board (IRB) approval to conduct a clinical trial at a prospective site;
- the FDA or other comparable foreign regulatory authorities may require us to submit additional data or impose other requirements before permitting us to initiate a clinical trial;
- slower than expected rates of patient recruitment and enrollment;
- failure of patients to complete the clinical trial;
- the inability to enroll a sufficient number of patients in studies to ensure adequate statistical power to detect statistically significant treatment effects;
- unforeseen safety issues, including severe or unexpected drug-related adverse effects experienced by patients, including possible deaths;
- lack of efficacy during clinical trials;
- termination of our clinical trials by one or more clinical trial sites;
- inability or unwillingness of patients or clinical investigators to follow our clinical trial protocols;
- inability to monitor patients adequately during or after treatment by us or our CROs;
- our CROs or clinical study sites failing to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all, deviating from the protocol or dropping out of a study;
- the inability to produce or obtain sufficient quantities of a product candidate to complete clinical trials;
- inability to address any noncompliance with regulatory requirements or safety concerns that arise during the course of a clinical trial;
- the need to suspend, repeat or terminate clinical trials as a result of non-compliance with regulatory requirements, inconclusive or negative results or unforeseen complications in testing; and

Table of Contents

Index to Financial Statements

- the suspension or termination of our clinical trials upon a breach or pursuant to the terms of any agreement with, or for any other reason by, any future strategic partners that have responsibility for the clinical development of any of our product candidates.

Changes in regulatory requirements, policies and guidelines may also occur and we may need to significantly modify our clinical development plans to reflect these changes with appropriate regulatory authorities. These changes may require us to renegotiate terms with CROs or resubmit clinical trial protocols to IRBs for re-examination, which may impact the costs, timing or successful completion of a clinical trial. Our clinical trials may be suspended or terminated at any time by us, the FDA, other regulatory authorities, the IRB overseeing the clinical trial at issue, any of our clinical trial sites with respect to that site, or us.

Any failure or significant delay in commencing or completing clinical trials for our product candidates, any failure to obtain positive results from clinical trials, any safety concerns related to our product candidates, or any requirement to conduct additional clinical trials or other testing of our product candidates beyond those that we currently contemplate would adversely affect our ability to obtain regulatory approval and our commercial prospects and ability to generate product revenue will be diminished.

If we experience delays or difficulties in the enrollment of patients in clinical trials, including as a result of competition for patients, we will be unable to complete these trials on a timely basis, if at all.

We may not be able to initiate or continue clinical trials for our product candidates if we are unable to identify and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or comparable foreign regulatory authorities. Patient enrollment, a significant factor in the timing of clinical trials, is affected by many factors including the size and nature of the patient population, the severity of the disease under investigation, the proximity of subjects to clinical sites, continued enrollment of prospective patients by clinical trial sites, efforts to facilitate timely enrollment, the eligibility criteria for the trial, the design of the clinical trial, patient referral practices of physicians, ability to obtain and maintain patient consents, ability to monitor patients adequately during and after treatment, risk that enrolled subjects will drop out before completion and clinicians' and patients' perceptions as to the potential advantages and disadvantages of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating.

In addition, our competitors, some of whom have significantly greater resources than we do, are conducting clinical trials for the same indications and seek to enroll patients in their studies that may otherwise be eligible for our clinical studies or trials, which could lead to slow recruitment and delays in our clinical programs. Further, since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which could further reduce the number of patients who are available for our clinical trials in these sites. Moreover, because our product candidates represent a departure from existing cancer treatments, potential patients and their doctors may be inclined to use conventional therapies, such as chemotherapy, IgG antibody therapy or CAR-T treatment, rather than enroll patients in our clinical trials.

Our inability to enroll a sufficient number of patients for our clinical trials would result in significant delays or may require us to abandon one or more clinical trials altogether. If we are unable to enroll a sufficient number of patients that will complete clinical testing, we will be unable to seek or gain marketing approval for such product candidates and our business will be harmed. Even if we are able to enroll a sufficient number of patients in our clinical studies or trials, 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 product candidates may have undesirable side effects that may delay or prevent marketing approval or, if approval is received, require them to be taken off the market, require them to include new safety warnings, contraindications or precautions, or otherwise limit their sales. No regulatory agency has made a determination that any of our product candidates are safe or effective for use by the general public for any indication.

All of our product candidates and discovery programs are in preclinical development or early stage clinical development, and not all adverse effects of drugs can be predicted or anticipated. Unforeseen side effects from our product candidates could arise at any time during clinical development or, if approved by regulatory authorities, after the approved product has been marketed. We intend to dose the first patient in a Phase 1 clinical trial for our lead

product candidate, IGM-2323 in 2019, and we do not yet have any safety data in humans. Our DR5 IgM antibody and our discovery programs are still in preclinical development and have not been tested on humans at all.

In our preclinical studies, we may observe undesirable characteristics of our product candidates. This may prevent us from advancing them into clinical trials, delay these trials or limit the extent of these trials. For example, we have observed some indications of toxicity at high doses in our *in vitro* studies in human hepatocytes and *in vivo* non-human primate studies for our DR5 IgM antibody. The dose levels where this *in vitro* toxicity was observed are significantly higher than the maximum dose levels we anticipate using in our clinical trials. Nonetheless, toxicity observations in clinical testing, if they occur, may limit our ability to develop a DR5 antibody or may constitute a dose limiting toxicity.

The results of future clinical trials may also show that IGM-2323, our DR5 IgM antibody and/or our discovery programs may cause undesirable or unacceptable side effects, which could interrupt, delay or halt clinical trials, and result in delay of, or failure to obtain, marketing approval from the FDA or comparable foreign regulatory authorities, or result in marketing approval from the FDA or comparable foreign regulatory authorities with restrictive label warnings or for limited patient populations, or result in potential product liability claims. No regulatory agency has made any determination that any of our product candidates or discovery programs is safe or effective for use by the general public for any indication.

Even if any of our product candidates receive marketing approval, if we or others later identify undesirable or unacceptable side effects caused by such products:

- regulatory authorities may require us to take our approved product off the market;
- regulatory authorities may require the addition of labeling statements, specific warnings, contraindication, precaution or field alerts to physicians and pharmacies;
- we may be required to change the way the product is administered, limit the patient population who can use the product or conduct additional clinical trials;
- we may be subject to limitations on how we may promote the product;
- sales of the product may decrease significantly;
- we may be subject to litigation or product liability claims; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of the affected product or could substantially increase commercialization costs and expenses, which in turn could delay or prevent us from generating revenue from the sale of any future products.

We face significant competition from entities that have developed or may develop product candidates for the treatment of diseases that we are initially targeting, including companies developing novel treatments and technology platforms. If our competitors develop and market products that are more effective, safer or less expensive than our product candidates, our commercial opportunities will be negatively impacted.

The development and commercialization of drugs and therapeutic biologics is highly competitive and subject to rapid and significant technological change. We are currently developing biotherapeutics that will compete with other drugs and therapies that currently exist or are being developed in the segments of the pharmaceutical, biotechnology and other related markets that develop immuno-oncology treatments. Product candidates we may develop in the future are also likely to face competition from other drugs and therapies, some of which we may not currently be aware. We have competitors both in the United States and internationally, including major multinational pharmaceutical companies, established biotechnology companies, specialty pharmaceutical companies, universities, academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for the research, development, manufacturing and commercialization of cancer immunotherapies. Many of our competitors have significantly greater financial, manufacturing, marketing, drug development, technical and human resources and commercial expertise than we do. Large pharmaceutical companies, in particular, have extensive experience in clinical testing, obtaining regulatory approvals, recruiting patients and in manufacturing pharmaceutical products. These companies also have significantly greater research and marketing capabilities than we do and may also have products that have been

approved or are in late stages of development and collaborative arrangements in our target markets with leading companies and research institutions. Established pharmaceutical companies may also invest heavily to accelerate discovery and development of novel compounds or to in-license novel compounds that could make our product candidates obsolete. As a result of all of these factors, our competitors may succeed in obtaining patent protection or FDA or other regulatory approval or discovering, developing and commercializing products in our field before we do.

There are a large number of companies developing or marketing treatments for cancer, including most major pharmaceutical and biotechnology companies, as well as many smaller biotechnology companies. These treatments consist both of small molecule drug products, as well as biologics that work by using antibody therapeutic platforms to address specific cancer targets. In addition, many companies, including large pharmaceutical and biotechnology companies such as AbbVie, Amgen, AstraZeneca/MedImmune, Bristol-Myers Squibb, Merck, Novartis, Pfizer and Roche/Genentech, are also developing immuno-oncology treatments for cancer.

We face significant competition from pharmaceutical and biotechnology companies that target specific tumor-associated antigens using immune cells or other cytotoxic modalities. These generally include immune cell redirecting therapeutics (*e.g.*, T cell engagers), adoptive cellular therapies (*e.g.*, CAR-T), antibody drug conjugates, targeted radiopharmaceuticals, targeted immunotoxin and targeted cancer vaccines.

With respect to our lead product candidate, IGM-2323, we are aware of other companies with competing clinical stage therapeutics that target CD20 that include, but are not limited to, Roche/Genentech, Regeneron, Xencor and Genmab.

With respect to our second product candidate, our DR5 IgM antibody, we are aware of other companies with competing clinical stage therapeutics that target DR5 that include, but are not limited to, AbbVie, InhibRx, Genmab and Boehringer Ingelheim.

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 effects, are more convenient or are less expensive than the products that we may develop. Our competitors also may obtain FDA or foreign regulatory approval for their products more rapidly than we may obtain approval for our product candidates, which could result in our competitors establishing a strong market position before we are able to enter the market.

Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and enrolling subjects for our clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs. In addition, the biotechnology industry is characterized by rapid technological change. If we fail to stay at the forefront of technological change, we may be unable to compete effectively. Technological advances or products developed by our competitors may render our technologies or product candidates obsolete, less competitive or not economical.

The manufacturing of our product candidates is complex. We and our third-party manufacturers may encounter difficulties in production. If we encounter any such difficulties, our ability to supply our product candidates for clinical trials or, if approved, for commercial sale, could be delayed or halted entirely.

We have spent significant resources to date on developing our current manufacturing processes and know-how to produce sufficient yields and optimize functionality in conjunction with our contract manufacturer. We plan to construct our own manufacturing facility to produce our product candidates in sufficient quantities to conduct clinical trials and ultimately commercial supply for any approved products. To do so, we will need to scale our manufacturing operations, as we do not currently have the infrastructure or capability internally to manufacture sufficient yields needed to advance our product candidates and discovery programs in preclinical studies and clinical trials. Accordingly, we will be required to make significant investments to expand our manufacturing facilities in the future, and our efforts to scale our internal manufacturing capabilities may not succeed.

Also, historically IgM antibodies have been particularly difficult to manufacture and CMOs have limited experience in the manufacturing of IgM antibodies. The process of manufacturing our product candidates is extremely susceptible to product loss due to contamination, equipment failure or improper installation or operation of equipment, vendor or operator error, contamination and inconsistency in yields, variability in product characteristics and difficulties in scaling the production process. On at least one occasion in the past, our contract manufacturer has failed to

successfully complete a scheduled manufacturing run of our IgM antibodies as a result of their manufacturing process errors. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our product candidates or in the manufacturing facilities in which our product candidates are made, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination.

All of our engineered antibodies are manufactured by culturing cells from a master cell bank. We have one master cell bank for each antibody manufactured in accordance with current good manufacturing practices (cGMPs) and multiple working cell banks. It is possible that we could lose multiple cell banks and have our manufacturing severely impacted by the need to replace the cell banks, and we may fail to have adequate backup should any particular cell bank be lost in a catastrophic event. Any adverse developments affecting manufacturing operations for our product candidates, if any are approved, may result in shipment delays, inventory shortages, lot failures, product withdrawals or recalls, or other interruptions in the supply of our products. We may also have to take inventory write-offs and incur other charges and expenses for products that fail to meet specifications, undertake costly remediation efforts or seek more costly manufacturing alternatives. Furthermore, it is too early to estimate our cost of goods sold. The actual cost to manufacture our product candidates could be greater than we expect because we are early in our development efforts and the use of engineered IgM antibodies is a novel therapeutic approach. Failure to develop our own manufacturing capacity may hamper our ability to further process improvement, maintain quality control, limit our reliance on contract manufacturers and protect our trade secrets and other intellectual property.

We may not be successful in our efforts to use and expand our IgM platform to build a pipeline of product candidates.

A key element of our strategy is to leverage our IgM platform to expand our pipeline of antibody product candidates. Although our research and development efforts to date have resulted in a pipeline of product candidates directed at various cancers, we may not be able to develop product candidates that are safe and effective. In addition, although we expect that our IgM platform will allow us to develop a steady stream of product candidates, we may not prove to be successful at doing so. Even if we are successful in continuing to build our pipeline, the potential product candidates that we identify may not be suitable for clinical development, including as a result of being shown to have harmful side effects or other characteristics that indicate that they are unlikely to be products that will receive marketing approval or achieve market acceptance. If we do not successfully develop and begin to commercialize product candidates, we will not be able to generate any product revenue, which would adversely affect business.

We may expend our limited resources to pursue product candidates or indications that do not yield a successful product and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Due to the significant resources required for the development of our programs, we must focus our programs on specific product candidates and indications and decide which product candidates to pursue and advance and the amount of resources to allocate to each. Our decisions concerning the allocation of research, development, collaboration, management and financial resources toward particular product candidates or indications 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 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 biotechnology 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 indications 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 sole development and commercialization rights.

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

We are highly dependent on the business, research and development and clinical expertise of Mr. Fred Schwarzer, our Chief Executive Officer, Dr. Bruce Keyt, our Chief Scientific Officer, Dr. Daniel Chen, our Chief Medical Officer, and Mr. Misbah Tahir, our Chief Financial Officer, as well as other members of our senior management, scientific

and clinical team. Although we have entered into employment agreements with our executive officers, each of them may terminate their employment with us at any time. The loss of the services of our executive officers or other key employees could impede the achievement of our research, development and commercialization objectives and seriously harm our ability to successfully implement our business strategy.

To succeed, we must recruit, retain, manage and motivate qualified clinical, scientific, manufacturing, and sales and marketing personnel, and we face significant competition for experienced personnel. In addition, we will need to expand and effectively manage our managerial, operational, financial, development and other resources in order to successfully pursue our research, development and commercialization efforts for our existing and future product candidates. Furthermore, replacing executive officers and key employees may be difficult and may take an extended period of time because of the limited talent pool in our industry due to the breadth of skills and experience required to successfully develop, gain regulatory approval of and commercialize products. Intense competition for attracting key skill-sets may limit our ability to retain and motivate these key personnel on acceptable terms.

Many of the other biotechnology companies that we compete against for qualified personnel have greater financial and other resources, different risk profiles and a longer history in the industry than we do. They also may provide more diverse opportunities and better prospects for career advancement. Some of these characteristics may be more appealing to high-quality candidates than what we have to offer. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition to competition for personnel, the San Francisco Bay Area in particular is characterized by a high cost of living. We could in the future have difficulty attracting experienced personnel to our company and may be required to expend significant financial resources in our employee recruitment and retention efforts.

In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability. If we are unable to continue to attract and retain high quality personnel, our ability to pursue our growth strategy will be limited.

Changes in methods of product candidate manufacturing or formulation may result in the need to perform new clinical trials, which would require additional costs and cause delay.

As product candidates are developed through preclinical to late-stage clinical trials towards approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods and formulation, are altered along the way in an effort to optimize yield and manufacturing batch size, minimize costs and achieve consistent quality and results. Such changes carry the risk that they will not achieve these intended objectives. Any of these changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials conducted with the altered materials. This could delay completion of clinical trials, require the conduct of bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidates and jeopardize our ability to commence product sales and generate revenue.

The design or execution of our future clinical trials may not support regulatory approval.

The design or execution of a clinical trial can determine whether its results will support regulatory approval and flaws in the design or execution of a clinical trial may not become apparent until the clinical trial is well advanced. In some instances, there can be significant variability in safety or efficacy results between different trials of the same product candidate due to numerous factors, including changes in trial protocols, differences in size and type of the patient populations, adherence to the dosing regimen and other trial protocols and the rate of dropout among clinical trial participants. We do not know whether any clinical trials that we may conduct will demonstrate consistent or adequate efficacy and safety to obtain regulatory approval to market our product candidates.

Further, the FDA and comparable foreign regulatory authorities have substantial discretion in the approval process and in determining when or whether regulatory approval will be obtained for any of our product candidates. Our product candidates may not be approved even if they achieve their primary endpoints in potential future Phase 3 clinical trials or registration trials. The FDA or comparable foreign regulatory authorities may disagree with our trial design and our interpretation of data from preclinical studies and clinical trials. In addition, any of these regulatory

Table of Contents

Index to Financial Statements

authorities may change requirements for the approval of a product candidate even after reviewing and providing comments or advice on a protocol for a pivotal Phase 3 clinical trial. In addition, any of these regulatory authorities may also approve a product candidate for fewer or more limited indications than we request or may grant approval contingent on the performance of costly post-marketing clinical trials. The FDA or comparable foreign regulatory authorities may not approve the labeling claims that we believe would be necessary or desirable for the successful commercialization of our product candidates. Failure to successfully obtain regulatory approval could have a material adverse impact on our business and financial performance.

Even if any of our product candidates receive regulatory approval, the approved products may not achieve broad market acceptance among physicians, patients, the medical community and third-party payors, in which case revenue generated from their sales would be limited.

Even if regulatory approval is obtained for a product candidate, we may not generate or sustain revenue from sales of the product due to factors such as whether the product can be sold at a competitive price and otherwise will be accepted in the market. The antibodies we are developing use relatively new technologies. Market participants with significant influence over acceptance of new treatments, such as physicians and third-party payors, may not adopt a product or treatment based on our technologies, and the medical community and third-party payors may not accept and use, or provide favorable reimbursement for, any product candidates developed by us. The commercial success of our product candidates will depend upon their acceptance among physicians, patients, the medical community and third-party payors. The degree of market acceptance of any of our product candidates will depend on a number of factors, including:

- the efficacy and safety profile as demonstrated in clinical trials compared to alternative treatments;
- limitations or warnings contained in the approved labeling for our product candidates;
- changes in the standard of care for the targeted indications for our product candidates;
- the clinical indications for which any product candidate is approved;
- lack of significant adverse side effects;
- the effectiveness of sales and marketing efforts;
- availability and extent of coverage and adequate reimbursement, as well as pricing, by managed care plans and other third-party payors, including government authorities;
- patients' willingness to pay out-of-pocket in the absence of coverage and/or adequate reimbursement from third-party payors;
- timing of market introduction of our product candidate as well as competitive products;
- the potential and perceived advantages of our product candidate over alternative treatments;
- the degree of cost-effectiveness of our product candidate;
- availability of alternative therapies at similar or lower cost, including generic and over-the-counter products;
- the extent to which any product candidate is approved for inclusion on formularies of hospitals and managed care organizations;
- whether the product is designated under physician treatment guidelines as a first-line therapy or as a second or third-line therapy for particular indications;
- whether our product candidate can be used effectively with other therapies to achieve higher response rates;
- adverse publicity about our product candidate or favorable publicity about competitive products;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the approval of other new therapies for the same indications;
- relative convenience and ease of administration of our product candidates; and
- potential product liability claims.

If any of our product candidates are approved, but do not achieve an adequate level of acceptance by physicians, patients, the medical community and third-party payors, we may not generate sufficient revenue from these products, and we may not become or remain profitable. In addition, efforts to educate the medical community and third-party payors on the benefits of our product candidates may require significant resources and may never be successful.

Table of Contents

Index to Financial Statements

If we decide to seek orphan drug designation for one or more of our product candidates, we may be unsuccessful or may be unable to maintain the benefits associated with orphan drug designation for IGM-2323, our DR5 IgM antibody or future product candidates that we may develop. If our competitors are able to obtain orphan product exclusivity for their products in specific indications, we may not be able to have competing products approved in those indications by the applicable regulatory authority for a significant period of time.

Under the Orphan Drug Act, the FDA may designate a product candidate as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the United States. We may seek Orphan Drug Designation for certain indications for our product candidates in the future. Orphan Drug Designation neither shortens the development time or regulatory review time of a drug nor gives the drug any advantage in the regulatory review or approval process.

Generally, if a product candidate with an Orphan Drug Designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA from approving another marketing application for the same drug for the same indication for seven years. Therefore, if our competitors are able to obtain orphan product exclusivity for their product candidates in the same indications we are pursuing, we may not be able to have competing products approved in those indications by the applicable regulatory authority for a significant period of time. There are also limited circumstances where the FDA may reduce the seven-year exclusivity for a product candidate with an orphan drug designation where other product candidates show clinical superiority to the product with orphan exclusivity or if the FDA finds that the holder of the orphan exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan product to meet the needs of patients with the disease or condition for which the drug was designated. Historically, development of IgM antibodies has been limited by difficulties in recombinant expression and manufacture of these antibodies; therefore, the FDA may determine that we cannot assure the availability of sufficient quantities of our product candidates to the extent necessary to support marketing exclusivity. As a result, even if one of our product candidates receives orphan exclusivity, the FDA can still approve other drugs that have a different active ingredient for use in treating the same indication or disease. Furthermore, the FDA can waive orphan exclusivity if we are unable to manufacture sufficient supply of our product.

Even if we obtain FDA approval of any of our product candidates, we may never obtain approval or commercialize such products outside of the United States, which would limit our ability to realize their full market potential.

In order to market any products outside of the United States, we must establish and comply with numerous and varying regulatory requirements of other countries regarding safety and efficacy and approval standards. Clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country does not mean that regulatory approval will be obtained in any other country. Approval procedures vary among countries and can involve additional product testing and validation and additional administrative review periods. Seeking foreign regulatory approvals could result in significant delays, difficulties and costs for us and may require additional preclinical studies or clinical trials which would be costly and time consuming. Regulatory requirements can vary widely from country to country and could delay or prevent the introduction of our products in those countries. Satisfying these and other regulatory requirements is costly, time consuming, uncertain and subject to unanticipated delays. In addition, our failure to obtain regulatory approval in any country may delay or have negative effects on the process for regulatory approval in other countries. We do not have any product candidates approved for sale in any jurisdiction, including international markets, and we do not have experience in obtaining regulatory approval in international markets. If we fail to comply with regulatory requirements in international markets or to obtain and maintain required approvals, our target market will be reduced and our ability to realize the full market potential of our products will be harmed.

Reimbursement decisions by third-party payors may have an adverse effect on pricing and market acceptance. If reimbursement is not available or is not sufficient for our products, it is less likely that our products will be widely used.

Even if our product candidates are approved for sale by the appropriate regulatory authorities, market acceptance and sales of these products will depend on coverage and reimbursement policies and may be affected by future healthcare reform measures. Third-party payors, such as government healthcare programs, private health insurers and health maintenance organizations, decide which drugs they will cover and establish the level of reimbursement for such drugs. We cannot be certain that coverage and reimbursement will be available or adequate for any products

that we develop. If coverage and adequate reimbursement is not available or is available on a limited basis, we may not be able to successfully commercialize any of our product candidates, if approved.

There may be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA, EMA or other regulatory authorities. Moreover, eligibility for coverage and reimbursement does not imply that a drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution expenses. Interim reimbursement levels for new drugs, if applicable, may also be insufficient to cover our and any collaborator's costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Further, no uniform policy for coverage and reimbursement exists in the United States, and coverage and reimbursement can differ significantly from payor to payor. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future change to laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Our inability to promptly obtain coverage and adequate reimbursement from third-party payors, including both government-funded and private payors, for any approved products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize product candidates and our overall financial condition.

If the market opportunities for any product that we develop are smaller than we believe they are, our revenue may be adversely affected and our business may suffer.

We intend to initially focus our product candidate development on therapeutic IgM antibodies for the treatment of cancer patients. Our projections of addressable patient populations that have the potential to benefit from treatment with our product candidates are based on estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, physician interviews, patient foundations and market research, and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these diseases. The number of patients may turn out to be lower than expected. If any of the foregoing estimates are inaccurate, the market opportunities for any of our product candidates could be significantly diminished and have an adverse material impact on our business.

The market opportunities for our product candidates may be limited to those patients who are ineligible for or have failed prior treatments and may be small. The FDA often approves new cancer therapies only for use after one or more other treatments have failed. When cancer is detected early enough, first-line therapy, such as chemotherapy, hormone therapy or surgery, is sometimes adequate to treat the patient. If first-line therapy proves unsuccessful, second-line therapies, such as additional chemotherapy, radiation, antibody drugs, tumor targeted small molecules, or a combination of these therapies, may be administered. Third- or fourth-line therapies may include bone marrow transplantation, antibody and small molecule targeted therapies, more invasive forms of surgery, and new technologies. We may initially seek approval of our product candidates for patients who have failed one or more approved treatments. For instance, we intend to dose the first patient in a Phase 1 clinical trial for the treatment of relapsed/refractory B cell NHL patients in 2019. Even if we obtain regulatory approval and significant market share for IGM-2323, because the potential target population may be small, we may never achieve profitability without obtaining regulatory approval for additional indications. In addition, there is no guarantee that any of our product candidates, even if approved, would be approved as a particular line of treatment. In addition, even if any of our product candidates were approved for a particular line of treatment, we may have to conduct additional clinical trials prior to gaining approval as an earlier line of treatment.

Even if we receive regulatory approval to commercialize any of our product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review, which will result in significant additional expense.

Any regulatory approvals that we receive for our product candidates may be subject to limitations on the approved indicated uses for which the product may be marketed or subject to certain conditions of approval, and may contain requirements for potentially costly post-approval trials, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the marketed product.

For any approved product, we will be subject to ongoing regulatory obligations and extensive oversight by regulatory authorities, including with respect to manufacturing processes, labeling, packaging, distribution, adverse event

Table of Contents

Index to Financial Statements

reporting, storage, advertising, promotion and recordkeeping for the product. These requirements include submissions of safety and other post-approval information and reports, as well as continued compliance with cGMPs and current good clinical practices (cGCP) for any clinical trials that we conduct post-approval. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of the product;
- withdrawal of the product from the market or voluntary or mandatory product recalls;
- adverse publicity, fines, warning letters or holds on clinical trials;
- refusal by the FDA, EMA or another applicable regulatory authority to approve pending applications or supplements to approved applications filed by us, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; and
- injunctions or the imposition of civil or criminal penalties.

Occurrence of any of the foregoing could have a material and adverse effect on our business and results of operations. Further, the FDA's or comparable foreign regulatory authorities' policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. 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, which would adversely affect our business, prospects and ability to generate revenue or achieve or sustain profitability.

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

We face an inherent risk of product liability lawsuits related to the testing of our product candidates in seriously ill patients, and will face an even greater risk if product candidates are approved by regulatory authorities and introduced commercially. Product liability claims may be brought against us by participants enrolled in our clinical trials, patients, health care providers or others using, administering or selling any of our future approved products. If we cannot successfully defend ourselves against any such claims, we may incur substantial liabilities. Regardless of their merit or eventual outcome, liability claims may result in:

- decreased demand for any future approved products;
- injury to our reputation;
- withdrawal of clinical trial participants;
- termination of clinical trial sites or entire trial programs;
- increased regulatory scrutiny, including investigations by the FDA and other regulators of the safety and effectiveness of our products, our manufacturing processes and facilities or our marketing programs;
- significant litigation costs;
- substantial monetary awards to or costly settlement with patients or other claimants;
- product recalls, a change in the indications for which they may be used or suspension or withdrawal of marketing approvals;
- loss of revenue;
- diversion of management and scientific resources from our business operations; and
- the inability to commercialize our product candidates.

If any of our product candidates are approved for commercial sale, we will be highly dependent upon consumer perceptions of us and the safety and quality of our products. We could be adversely affected if we are subject to negative publicity. We could also be adversely affected if any of our products or any similar products distributed by other companies prove to be, or are asserted to be, harmful to patients. Because of our dependence upon consumer perceptions, any adverse publicity associated with illness or other adverse effects resulting from patients' use or misuse of our products or any similar products distributed by other companies could have a material adverse impact on our financial condition or results of operations.

Table of Contents

Index to Financial Statements

We may need to have in place increased product liability coverage if and when we begin the commercialization of our product candidates. Insurance coverage is becoming increasingly expensive. As a result, we may be unable to maintain or obtain sufficient insurance at a reasonable cost to protect us against losses that could have a material adverse effect on our business. A successful product liability claim or series of claims brought against us, particularly if judgments exceed any insurance coverage we may have, could decrease our cash resources and adversely affect our business, financial condition and results of operation.

Our product candidates, for which we intend to seek approval, may face competition sooner than anticipated.

Our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of biosimilar products. The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010 (ACA), created a new regulatory scheme authorizing the FDA to approve biosimilars. Under the ACA, a manufacturer may submit an application for licensure of a biologic product that is "biosimilar to" or "interchangeable with" a previously approved biological product or "reference product." Under this statutory scheme, an application for a biosimilar product may not be submitted to the FDA until four years following approval of the reference product. The FDA may not approve a biosimilar product until 12 years from the date on which the reference product was approved. Even if a product is considered to be a reference product eligible for exclusivity, another company could market a competing version of that product if the FDA approves a full Biologics License Application (BLA) for such product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, efficacy and potency of their product. Furthermore, recent legislation has proposed that the 12-year exclusivity period for a referenced product may be reduced to seven years.

Acquisitions or joint ventures could increase our capital requirements, disrupt our business, cause dilution to our stockholders, cause us to incur debt or assume contingent liabilities and otherwise harm our business.

We evaluate various strategic transactions on an ongoing basis. We may acquire other businesses, products or technologies as well as pursue strategic alliances, joint ventures or investments in complementary businesses. Any of these transactions could be material to our financial condition and operating results and expose us to many risks, including:

- disruption in our relationships with any strategic partners or suppliers as a result of such a transaction;
- the assumption of additional indebtedness or contingent or otherwise unanticipated liabilities related to acquired companies;
- the issuance of our equity securities;
- difficulties integrating acquired personnel, technologies and operations into our existing business;
- retention of key employees, the loss of key personnel and uncertainties in our ability to maintain key business relationships;
- diversion of management time and focus from operating our business to management of strategic alliances or joint ventures or acquisition integration challenges;
- 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 marketing approvals;
- increases in our expenses and reductions in our cash available for operations and other uses;
- 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; and
- possible write-offs or impairment charges relating to acquired businesses.

Foreign acquisitions involve unique risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, currency risks and the particular economic, political and regulatory risks associated with specific countries.

Also, the anticipated benefit of any strategic alliance, joint venture or acquisition may not materialize or such strategic alliance, joint venture or acquisition may be prohibited. Future credit arrangements may restrict our ability to pursue certain mergers, acquisitions, amalgamations or consolidations that we may believe to be in our best interest. Additionally, future acquisitions or dispositions could result in potentially dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities or amortization expenses or write-offs of goodwill, any of

which could harm our financial condition. We cannot predict the number, timing or size of future joint ventures or acquisitions, or the effect that any such transactions might have on our operating results. Moreover, we may not be able to identify 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.

Foreign governments tend to impose strict price controls, which may adversely affect our future profitability.

In most foreign countries, particularly those in the European Union, prescription drug pricing and reimbursement is subject to governmental control. In those countries that impose price controls, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our product candidates to other available therapies.

Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain marketing approval for a product candidate in a particular country, but then be subject to price regulations that delay commercial launch of the product candidate, possibly for lengthy time periods, and negatively impact the revenue that are generated from the sale of the product in that country. If reimbursement of such product candidates is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, or if there is competition from lower priced cross-border sales, our profitability will be negatively affected.

We will need to grow our organization, and we may experience difficulty in managing this growth, which could disrupt our operations.

As of August 31, 2019, we had 51 employees. As our development and commercialization plans and strategies develop, and as we transition into operating as a public company, we expect to expand our employee base for managerial, operational, financial and other resources. Additionally, as our product candidates and discovery programs enter and advance through preclinical studies and any clinical trials, we will need to expand our development, manufacturing, regulatory and sales and marketing capabilities or contract with other organizations to provide these capabilities for us. Future growth would impose significant added responsibilities on members of management, including the need to identify, recruit, maintain, motivate and integrate additional employees. Also, our management may need to divert a disproportionate amount of their attention away from our day-to-day activities and devote a substantial amount of time to managing these growth activities. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, give rise to operational errors, loss of business opportunities, loss of employees and reduced productivity amongst remaining employees. Our expected growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of existing and additional product candidates and discovery programs. If our management is unable to effectively manage our expected growth, our expenses may increase more than expected, our ability to generate or grow revenue could be reduced and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize our product candidates and compete effectively with others in our industry will depend on our ability to effectively expand our organization and manage any future growth.

Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or protected health information or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we or our CROs may collect and store sensitive data, including legally protected health information, personally identifiable information, intellectual property and proprietary business information owned or controlled by us. We manage and maintain our applications and data by utilizing a combination of on-site systems, managed data center systems and cloud-based data center systems. These applications and data encompass a wide variety of business-critical information, including research and development information, commercial information and business and financial information. We face four primary risks relative to protecting this critical information, including loss of access risk, inappropriate disclosure risk, inappropriate modification risk and the risk of being unable to adequately monitor our controls over the first three risks.

The secure processing, storage, maintenance and transmission of this critical information are vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take

measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure and that of any third-party billing and collections provider we may utilize, may be vulnerable to cybersecurity attacks by hackers or viruses or breaches due to employee error, malfeasance or other disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act (HIPAA) as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH), mandatory notification and reporting obligations, additional regulatory oversight, significant regulatory penalties and remediation expenses. There is no guarantee that we can protect our systems from breach. Unauthorized access, loss or dissemination of information or any mechanical failure of our or our third-party service providers' information technology systems could also disrupt our operations, including our ability to conduct our analyses, provide test results, bill payors or providers, process claims and appeals, conduct research and development activities, collect, process and prepare company financial information, provide information about any future products, manage the administrative aspects of our business and damage our reputation, any of which could adversely affect our business.

In addition, the interpretation and application of consumer, health-related and data protection laws in the United States, the European Union, and elsewhere are often uncertain, contradictory and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy regulations vary between states, may differ from country to country, and may vary based on whether testing is performed in the United States or in the local country. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business.

Furthermore, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Likewise, we rely on other third parties for the manufacture of our product candidates and to conduct clinical trials, and similar events relating to their computer systems could also have a material adverse effect on our business.

Current and future legislation may increase the difficulty and cost for us to commercialize our product candidates, if approved, and affect the prices we may obtain.

The United States and some foreign jurisdictions are considering or have enacted a number of legislative and regulatory proposals to change healthcare systems in ways that could affect our ability to sell any of our product candidates profitably, if such product candidates are approved for sale. Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives.

In March 2010, the ACA was enacted, which includes measures that have significantly changed the way healthcare is financed by both governmental and private insurers, and continues to significantly impact the United States pharmaceutical industry. Among the provisions of the ACA of importance to the pharmaceutical industry are the following:

- an annual, non-deductible fee on any entity that manufactures or imports certain branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13% of the average manufacturer price (AMP), for most branded and generic drugs, respectively;
- Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 70% point-of-sale discounts to negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period;

Table of Contents

Index to Financial Statements

- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the Federal Poverty Level, thereby potentially increasing manufacturers' Medicaid rebate liability;
- requirement that applicable manufacturers and group purchasing organizations report annually to the Centers for Medicare & Medicaid Services (CMS), information regarding certain payments and other transfers of value given to physicians and teaching hospitals, and any ownership or investment interest that physicians, or their immediate family members, have in their company;
- a requirement that manufacturers and authorized distributors of applicable drugs annually report information related to samples provided to practitioners;
- expansion of healthcare fraud and abuse laws, including the False Claims Act and the Anti-Kickback Statute, new government investigative powers, and enhanced penalties for noncompliance;
- 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 & Medicaid Innovation at 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. In addition, other legislative changes have been proposed and adopted since the ACA was enacted. These changes include aggregate reductions to Medicare payments to providers of up to 2% per fiscal year pursuant to the Budget Control Act of 2011, which began in 2013 and will remain in effect through 2027 unless additional Congressional action is taken. Moreover, there has recently been heightened governmental scrutiny over the manner in which drug 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. The Trump administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase 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.

In the European Union similar political, economic and regulatory developments may affect our ability to profitably commercialize our current or any future products. 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. In international markets, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies. Our future products, if any, might not be considered medically reasonable and necessary for a specific indication or cost-effective by third-party payors, an adequate level of reimbursement might not be available for such products and third-party payors' reimbursement policies might adversely affect our ability to sell any future products profitably.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In addition, increased scrutiny by the

Table of Contents

Index to Financial Statements

U.S. Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-approval testing and other requirements.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. 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, our product candidates may lose any marketing approval that may have been obtained and we may not achieve or sustain profitability, which would adversely affect our business.

Inadequate funding for the FDA, the SEC and other government agencies could hinder their ability to hire and retain key leadership and other personnel, prevent new products and services from being developed or commercialized in a timely manner or otherwise prevent those agencies from performing normal business functions on which the operation of our business may rely, which could negatively impact our business.

The ability of the FDA to review and approve new products can be affected by a variety of factors, including government budget and funding levels, ability to hire and retain key personnel and accept the payment of user fees, and statutory, regulatory, and policy changes. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of the Securities and Exchange Commission (SEC) and other government agencies on which our operations may rely, including those that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable.

Disruptions at the FDA and other agencies may also slow the time necessary for new drugs to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, in recent years, including in 2018 and 2019, the U.S. government shut down several times and certain regulatory agencies, such as the FDA and the SEC, had to furlough critical employees and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business. Further, upon completion of this offering and in our operations as a public company, future government shutdowns could impact our ability to access the public markets and obtain necessary capital in order to properly capitalize and continue our operations.

Our business may become subject to economic, political, regulatory and other risks associated with international operations.

Our business may be subject to risks associated with conducting business internationally. While we have not taken any steps to enter into any non-U.S. markets, we may do so in the future. In addition, our future suppliers and collaborative and clinical trial relationships may be located outside the United States. Accordingly, our future results could be harmed by a variety of factors, including:

- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- differing regulatory requirements for drug approvals in foreign countries;
- potentially reduced protection for intellectual property rights;
- difficulties in compliance with non-U.S. laws and regulations;
- changes in non-U.S. regulations and customs, tariffs and trade barriers;
- changes in non-U.S. currency exchange rates and currency controls;
- changes in a specific country's or region's political or economic environment;
- trade protection measures, import or export licensing requirements or other restrictive actions by U.S. or non-U.S. governments;
- differing reimbursement regimes, including price controls;
- negative consequences from changes in tax laws;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- difficulties associated with staffing and managing foreign operations, including differing labor relations;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geo-political actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

Table of Contents

Index to Financial Statements

Our business and current and future relationships with customers and third-party payors in the United States and elsewhere will be subject, directly or indirectly, to applicable federal and state anti-kickback, fraud and abuse, false claims, transparency, health information privacy and security and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, administrative burdens, and diminished profits and future earnings.

Healthcare providers, physicians and third-party payors in the United States and elsewhere play a primary role in the recommendation and prescription of any product candidates for which we may obtain marketing approval. Our current and future arrangements with healthcare professionals, principal investigators, consultants, customers, and third-party payors and other entities may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations, including, without limitation, the federal Anti-Kickback Statute and the federal False Claims Act, that may constrain the business or financial arrangements and relationships through which we conduct clinical research on product candidates and market, sell and distribute any products for which we obtain marketing approval. In addition, we may be subject to transparency laws and patient privacy regulation by the federal government and by the U.S. states and foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws that may affect our ability to operate include, but are not limited to, the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration (including any kickback, bribe or rebate), directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal and state healthcare programs such as Medicare and Medicaid;
- federal civil and criminal false claims laws, including the Federal False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalty laws, which impose criminal and civil penalties against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
- HIPAA, which among other things, imposes criminal liability for knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or to obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (*e.g.*, public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of or payment for healthcare benefits, items or services relating to healthcare matters;
- HIPAA, as amended by HITECH, and its implementing regulations, which imposes certain obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;
- the federal Open Payments program under the Physician Payments Sunshine Act, created under Section 6002 of the ACA and its implementing regulations requires certain manufacturers of covered drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) and applicable group purchasing organizations to report annually to CMS information related to "payments or other transfers of value" made to covered recipients, such as physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and further that such applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held by physicians (as defined above) and their immediate family members;
- analogous state and foreign 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 state governmental and non-governmental third-party payors, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government; state laws that require drug manufacturers to track gifts and other remuneration and items of value provided to healthcare

Table of Contents

Index to Financial Statements

professionals and entities; state and local laws that require the registration of pharmaceutical sales representatives; and state laws that require drug manufacturers to report information relating to pricing and marketing information; and

- state and foreign laws that govern the privacy and security of health information in specified circumstances, many of which differ from each other in significant ways and often are not pre-empted by HIPAA, thus complicating compliance efforts.

Because of the breadth of these laws and the narrowness of the statutory exceptions and regulatory safe harbors available, it is possible that some of our current and future business activities could be subject to challenge under one or more of such laws. In addition, recent healthcare reform legislation has strengthened these laws. For example, the ACA, among other things, amends the intent requirement of the U.S. federal Anti-Kickback Statute and certain criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of these statutes or specific intent to violate them in order to be in violation. Moreover, the ACA provides that the government may assert that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws may involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws. If our operations are found to be in violation of any of these laws or any other laws that may apply to us, we may be subject to significant civil, criminal and administrative penalties, including, without limitation, damages, fines, disgorgement, imprisonment, exclusion from participation in government healthcare programs, such as Medicare and Medicaid, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws and the curtailment or restructuring of our operations, which could have a material adverse effect on our business. If any of the physicians or other providers or entities with whom we expect to do business, is found not to be in compliance with applicable laws, it may be subject to significant criminal, civil or administrative sanctions, including exclusions from participation in government healthcare programs, which could also materially affect our business.

We are subject to U.S. and certain foreign export and import controls, sanctions, embargoes, anti-corruption laws, and anti-money laundering laws and regulations. Compliance with these legal standards could impair our ability to compete in domestic and international markets. We can face criminal liability and other serious consequences for violations which can harm our business.

We are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls, the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, the United Kingdom Bribery Act 2010, the Proceeds of Crime Act 2002, and other state and national anti-bribery and anti-money laundering laws in the countries in which we conduct activities. Anti-corruption laws are interpreted broadly and prohibit companies and their employees, agents, contractors, and other partners from authorizing, promising, offering, or providing, directly or indirectly, improper payments or anything else of value to recipients in the public or private sector. We may engage third parties for clinical trials outside of the United States, to sell our products abroad once we enter a commercialization phase, or to obtain necessary permits, licenses, patent registrations, and other regulatory approvals. We may have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities, and other organizations. We can be held liable for the corrupt or other illegal activities of our employees, agents, contractors, and other partners, even if we do not explicitly authorize or have actual knowledge of such activities. Any violation of the laws and regulations described above may result in substantial civil and criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences.

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

We are exposed to the risk of employee fraud or other misconduct. Misconduct by employees and independent contractors, such as principal investigators, consultants and vendors, could include intentional failures to comply with FDA regulations, to provide accurate information to the FDA, to comply with federal and state health care fraud

and abuse laws, to report financial information or data accurately or to disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the health care industry are subject to extensive laws intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Employee and independent contractor misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. We have adopted a written code of business conduct and ethics, but it is not always possible to identify and deter employee or independent contractor misconduct, 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 comply with these laws or regulations. 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, including the imposition of significant fines or other sanctions.

If we do not comply with laws regulating the protection of the environment and health and human safety, our business could be adversely affected.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our research and development involves, and may in the future involve, the use of potentially hazardous materials and chemicals. Our operations may produce hazardous waste products. Although we believe that our safety procedures for handling and disposing of these materials comply with the standards mandated by local, state and federal laws and regulations, the risk of accidental contamination or injury from these materials cannot be eliminated. If an accident occurs, we could be held liable for resulting damages, which could be substantial. We are also subject to numerous environmental, health and workplace safety laws and regulations and fire and building codes, including those governing laboratory procedures, exposure to blood-borne pathogens, use and storage of flammable agents and the handling of biohazardous materials. Although we maintain workers' compensation insurance as prescribed by the State of California to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of these materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us. Additional federal, state and local laws and regulations affecting our operations may be adopted in the future. Current or future laws and regulations may impair our research, development or commercialization efforts. We may incur substantial costs to comply with, and substantial fines or penalties if we violate, any of these laws or regulations.

Business disruptions could seriously harm our business and financial condition and increase our costs and expenses.

Our operations, and those of our CROs, suppliers, and other contractors and consultants, could be subject to earthquakes, power shortages, telecommunications failures, failures or breaches of information technology systems, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics, and other natural or man-made disasters or business interruptions, for which we are partly uninsured. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. We currently rely on third party manufacturers to produce and process our product candidates. Our ability to obtain clinical supplies of our product candidates could be disrupted if the operations of these suppliers are affected by a man-made or natural disaster or other business interruption.

All of our operations including our corporate headquarters are located in a single facility in Mountain View, California. Damage or extended periods of interruption to our facilities due to fire, natural disaster, power loss, communications failure, unauthorized entry or other events could cause us to cease or delay development of some or all of our product candidates. We do not carry sufficient insurance to compensate us for actual losses from interruption of our business that may occur, and any losses or damages incurred by us could harm our business.

Risks Related to Our Financial Position and Need for Additional Capital

We have incurred significant losses since inception and anticipate that we will continue to incur losses for the foreseeable future. We have no products approved for commercial sale, and to date we have not generated any revenue or profit from product sales. We may never achieve or sustain profitability.

We have incurred significant losses since our inception. Our net loss for the six months ended June 30, 2019 and the year ended December 31, 2018 was $18.1 million and $22.7 million, respectively. As of June 30, 2019, our

Table of Contents

Index to Financial Statements

accumulated deficit was approximately $82.2 million. We expect to continue to incur losses for the foreseeable future, and we expect these losses to increase as we continue our research and development of, and seek regulatory approvals for, our product candidates, prepare for and begin to commercialize any approved product candidates and add infrastructure and personnel to support our product development efforts and operations as a public company. The net losses and negative cash flows incurred to date, together with expected future losses, have had, and likely will continue to have, an adverse effect on our shareholders' deficit and working capital. The amount of future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue. The net losses we incur may fluctuate significantly from quarter-to-quarter such that a period-to-period comparison of our results of operations may not be a good indication of our future performance.

Because of the numerous risks and uncertainties associated with drug development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to generate product revenue or achieve profitability. For example, our expenses could increase if we are required by the FDA to perform clinical trials in addition to those that we currently expect to perform, or if there are any delays in completing our currently planned clinical trials or in the development of any of our product candidates.

Drug development is a highly speculative undertaking and involves a substantial degree of uncertainty. We have never generated any revenue from product sales and may never be profitable. Our ability to generate revenue and achieve profitability depends significantly on our ability to achieve a number of objectives.

Since the commencement of our operations, we have focused substantially all of our resources on conducting research and development activities, including drug discovery and preclinical studies, establishing and maintaining our intellectual property portfolio, the manufacturing of clinical and research material, developing our in-house manufacturing capabilities, hiring personnel, raising capital and providing general and administrative support for these operations. Since 2010, such activities have exclusively related to the research, development and manufacture of IgM antibodies and to building our proprietary IgM antibody technology platform. We are still in the early stages of developing our product candidates, and we have not completed development of any product candidate. As a result, we expect that it will be several years, if ever, before we generate revenue from product sales. Our ability to generate revenue and achieve profitability depends in large part on our ability, to successfully complete the development of, obtain the necessary regulatory approvals for, and commercialize, product candidates. We do not anticipate generating revenue from sales of products for the foreseeable future.

To generate product revenue and become and remain profitable, we must succeed in developing and commercializing product candidates with significant market potential. This will require us to be successful in a range of challenging activities for which we are only in the preliminary stages, including:

- successfully completing preclinical and clinical development of our product candidates in a timely manner;
- obtaining regulatory approval for such product candidates in a timely manner;
- satisfying any post-marketing approval commitments required by applicable regulatory authorities;
- developing an efficient, scalable and compliant manufacturing process for such product candidates, including expanding and maintaining manufacturing operations, commercially viable supply and manufacturing relationships with third parties to obtain finished products that are appropriately packaged for sale;
- successfully launching commercial sales following any marketing approval, including the development of a commercial infrastructure, whether in-house or with one or more collaborators;
- maintaining a continued acceptable safety profile following any marketing approval;
- achieving commercial acceptance of such product candidates as viable treatment options by patients, the medical community and third-party payors;
- addressing any competing technological and market developments;
- identifying, assessing, acquiring and developing new product candidates;
- obtaining and maintaining patent protection, trade secret protection and regulatory exclusivity, both in the United States and internationally;
- protecting our rights in our intellectual property portfolio, including our licensed intellectual property;

Table of Contents

Index to Financial Statements

- negotiating favorable terms in any collaboration, licensing or other arrangements that may be necessary to develop, manufacture or commercialize our product candidates; and
- attracting, hiring and retaining qualified personnel.

We may never succeed in these activities and may never generate revenue from product sales that is significant enough to achieve profitability. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. Our failure to become or remain profitable would depress our market value and could impair our ability to raise capital, expand our business, develop other product candidates, or continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

Even if this offering is successful, we will require substantial additional funding, which may not be available to us on acceptable terms, or at all, and, if not available, may require us to delay, scale back or cease our product development programs or operations.

All of our product candidates and discovery programs are in preclinical development or early stage clinical development. Developing drug products, including conducting preclinical studies and clinical trials, is expensive. In order to obtain such regulatory approval, we will be required to conduct clinical trials for each indication for each of our product candidates, which will increase our expenses. We will continue to require additional funding beyond this contemplated offering to complete the development and commercialization of our product candidates, to continue to advance our discovery programs, to expand our manufacturing facilities and to satisfy additional costs that we expect to incur in connection with operating as a public company. Such funding may not be available on acceptable terms or at all.

As of June 30, 2019, we had $42.7 million in cash and cash equivalents. Additionally, in July 2019, we received cash of $40.0 million in connection with the issuance of our Series C convertible preferred stock. We estimate that our net proceeds from this offering will be approximately $158.6 million, based upon the initial public offering price of $16.00 per share, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. Our estimate as to how long we expect the net proceeds from this offering, together with our existing cash and cash equivalents, to be able to continue to fund our operations is based on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Changing circumstances, some of which may be beyond our control, could cause us to consume capital significantly faster than we currently anticipate, and we may need to seek additional funds sooner than planned. In addition, because successful development of our product candidates is uncertain, we are unable to estimate the actual funds we will require to complete research and development and to commercialize our product candidates.

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

- the initiation, scope, rate of progress, results and cost of our preclinical studies, clinical trials and other related activities for our product candidates;
- the costs associated with manufacturing our product candidates, including expanding our own manufacturing facilities, and establishing commercial supplies and sales, marketing and distribution capabilities;
- the timing and cost of capital expenditures to support our research, development and manufacturing efforts;
- the number and characteristics of other product candidates that we pursue;
- the costs, timing and outcome of seeking and obtaining FDA and non-U.S. regulatory approvals;
- our ability to maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make in connection with the licensing, filing, defense and enforcement of any patents or other intellectual property rights;
- the timing, receipt and amount of sales from our potential products;
- our need and ability to hire additional management, scientific and medical personnel;
- the effect of competing products that may limit market penetration of our product candidates;
- our need to implement additional internal systems and infrastructure, including financial and reporting systems;

Table of Contents

Index to Financial Statements

- the economic and other terms, timing and success of any collaboration, licensing, or other arrangements into which we may enter in the future, including the timing of receipt of any milestone or royalty payments under these agreements;
- the compliance and administrative costs associated with being a public company; and
- the extent to which we acquire or invest in businesses, products or technologies, although we currently have no commitments or agreements relating to any of these types of transactions.

Until we can generate a sufficient amount of product revenue to finance our cash requirements, which we may never do, we expect to finance future cash needs primarily through a combination of public and private equity offerings, debt financings and strategic partnerships. We do not have any committed external source of funds. If sufficient funds on acceptable terms are not available when needed, or at all, we could be forced to significantly reduce operating expenses and delay, scale back or eliminate one or more of our clinical or discovery programs or our business operations.

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

To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these new securities may include liquidation or other preferences that adversely affect your rights as a common stockholder. Debt financing, if available at all, may involve fixed payment obligations or agreements that include covenants limiting or restricting our ability to take specific actions such as incurring additional debt, making capital expenditures, or declaring dividends. If we raise additional funds through partnerships, collaborations, strategic alliances, or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, product candidates, or future revenue streams, or grant licenses on terms that are not favorable to us. We cannot assure you that we will be able to obtain additional funding if and when necessary. If we are unable to obtain adequate financing on a timely basis, we could be required to delay, scale back or eliminate one or more of our clinical or discovery programs or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves. 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.

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

Global credit and financial markets have experienced extreme disruptions at various points over the last few decades, characterized by diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability. If another such disruption in credit and financial markets and deterioration of confidence in economic conditions occurs, our business may be adversely affected. If the equity and credit markets were to deteriorate significantly in the future, it may make any necessary debt or equity financing more difficult to complete, more costly, and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and share price and could require us to delay or abandon development or commercialization plans. In addition, there is a risk that one or more of our service providers, manufacturers or other partners would not survive or be able to meet their commitments to us under such circumstances, which could directly affect our ability to attain our operating goals on schedule and on budget.

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

As of December 31, 2018, we had net operating loss (NOL) carryforwards available to reduce future taxable income, if any, for federal and California income tax purposes of approximately $25.8 million and $23.5 million, respectively. At December 31, 2018, we also had federal and California research and development tax credit carryforwards of $2.5 million and $1.9 million, respectively, available to offset future income tax, if any. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended (the Code), if a corporation undergoes an “ownership change,” the corporation’s ability to use its NOLs and other pre-change tax attributes such as research tax credits to offset its post-change taxable income or taxes may be limited. In general, an “ownership change” occurs if there is a cumulative change in our ownership by “5% shareholders” that exceeds 50 percentage points over a rolling three-year period. Although we have not yet completed a formal Section 382 study, we believe that we may have undergone an “ownership change” in the past and we may undergo one or more ownership changes as a result of this offering or future transactions in our stock. Consequently, we may be limited in our ability to use our

Table of Contents

Index to Financial Statements

NOL carryforwards and other tax assets to reduce taxes owed on the net taxable income that we earn. As a result, even if we attain profitability, any limitations on the ability to use our NOL carryforwards and other tax assets could adversely affect our future cash flows. In addition, the Tax Cuts and Jobs Act of 2017 (Tax Act) imposes certain limitations on the deduction of NOLs, including a limitation on use of NOLs generated in tax years that began on or after January 1, 2018 to offset 80% of taxable income and disallowance of carryback of post-2017 NOLs.

Changes in the U.S. taxation of international business activities or the adoption of other tax reform policies could materially impact our business, results of operations and financial condition.

Changes to U.S. tax laws that may be enacted in the future could impact the tax treatment of our foreign earnings. If we expand our international business activities, any changes in the U.S. taxation of such activities may increase our worldwide effective tax rate and adversely affect our business, results of operations and financial condition. On December 22, 2017, President Trump signed into law the Tax Act, which significantly revises the Code. The Tax Act, among other things, reduces the corporate tax rate from a top marginal rate of 34% to a flat rate of 21%, repeals the alternative minimum tax for corporations, limits the tax deduction for interest expense to 30% of adjusted taxable income (except for certain small businesses), eliminates U.S. tax on foreign earnings (subject to certain exceptions) and modifies or repeals many business deductions and credits (including reducing the business tax credit for certain clinical testing expenses incurred in the testing of certain drugs for rare diseases or conditions generally referred to as “orphan drugs”).

Risks Related to Our Dependence on Third Parties

We currently rely on third-party manufacturers to produce our product candidates. Any failure by a third-party manufacturer to produce acceptable product candidates for us pursuant to our specifications and regulatory standards may delay or impair our ability to initiate or complete our clinical trials, obtain and maintain regulatory approvals or commercialize approved products.

We currently have limited in-house manufacturing experience and personnel. While we are in the process of designing and developing a cGMP manufacturing facility for the manufacture of clinical trial drug materials, we expect to continue to rely for some time on third parties to manufacture our product candidates for preclinical testing and clinical trials, in compliance with applicable regulatory and quality standards, and may do so for the commercial manufacture of some of our product candidates, if approved. To date, we have obtained bulk drug substance (BDS) for IGM-2323 from a single-source third-party contract manufacturer, and we expect to obtain BDS for our DR5 IgM antibody from a single-source third-party contract manufacturer as well. Any reduction or halt in supply of BDS from either of these contract manufacturers could severely constrain our ability to develop our product candidates until a replacement contract manufacturer is found and qualified. If we are unable to arrange for and maintain such third-party manufacturing sources that are capable of meeting regulatory standards, or fail to do so on commercially reasonable terms, we may not be able to successfully produce sufficient supply of product candidate or we may be delayed in doing so. If we were to experience an unexpected loss of supply of our product candidates, for any reason, whether as a result of manufacturing, supply or storage issues or otherwise, we could experience delays, disruptions, suspensions or terminations of, or be required to restart or repeat, any pending or ongoing clinical trials. Such failure or substantial delay or loss of supply could materially harm our business.

Reliance on third-party manufacturers entails risks to which we may not be subject if we manufactured product candidates ourselves, including:

- the possible failure of the third party to manufacture our product candidates according to our schedule, or at all, including if our third-party contractors give greater priority to the supply of other products over our product candidates or otherwise do not satisfactorily perform according to the terms of the agreements between us and them;
- reliance on the third party for regulatory compliance and quality control and assurance and failure of the third party to comply with regulatory requirements;
- the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control (including a failure to manufacture our product candidates in accordance with our product specifications);
- the possible mislabeling of clinical supplies, potentially resulting in the wrong dose amounts being supplied or active drug or placebo not being properly identified;

Table of Contents

Index to Financial Statements

- the possibility of clinical supplies not being delivered to clinical sites on time, leading to clinical trial interruptions, or of drug supplies not being distributed to commercial vendors in a timely manner, resulting in lost sales;
- the possible misappropriation of our proprietary information, including our trade secrets and know-how; and
- the possibility of termination or nonrenewal of the agreement by the third-party at a time that is costly or damaging to us.

In addition, the FDA, EMA and other regulatory authorities require that our product candidates be manufactured according to cGMP and similar foreign standards. Pharmaceutical manufacturers and their subcontractors are required to register their facilities or products manufactured at the time of submission of the marketing application and then annually thereafter with the FDA and certain state and foreign agencies. They are also subject to periodic unannounced inspections by the FDA, state and other foreign authorities. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain marketing approval for or market our product candidates, if approved. Any subsequent discovery of problems with a product, or a manufacturing or laboratory facility used by us or our strategic partners, may result in sanctions being imposed on us, including fines, injunctions, civil penalties, restrictions on the product or on the manufacturing or laboratory facility, including license revocation, marketed product recall, suspension of manufacturing, product seizure, voluntary withdrawal of the product from the market, operating restrictions or criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates and harm our business and results of operations.

We may have little to no control regarding the occurrence of third-party manufacturer incidents. Any failure by our third-party manufacturers to comply with cGMP or failure to scale up manufacturing processes, including any failure to deliver sufficient quantities of product candidates in a timely manner, would lead to a delay in, or failure to seek or obtain, regulatory approval of any of our product candidates. Furthermore, any change in manufacturer of our product candidates or approved products, if any, would require new regulatory approvals, which could delay completion of clinical trials or disrupt commercial supply of approved products.

Our current and anticipated future dependence upon others for the manufacture of our product candidates may adversely affect our future profit margins and our ability to commercialize any product candidates that receive marketing approval on a timely and competitive basis.

In some cases, the technical skills or technology required to manufacture our product candidates may be unique or proprietary to the original manufacturer, we may have difficulty transferring such skills or technology to another third party and a feasible alternative many not exist. These factors would increase our reliance on such manufacturer or require us to obtain a license from such manufacturer in order to have another third party manufacture our product candidates. If we are required to change manufacturers for any reason, we will be required to verify that the new manufacturer maintains facilities and procedures that comply with quality standards and with all applicable regulations and guidelines. The delays associated with the verification of a new manufacturer could negatively affect our ability to develop product candidates in a timely manner or within budget.

We rely on third parties to monitor, support, conduct and oversee clinical trials of the product candidates that we are developing and, in some cases, to maintain regulatory files for those product candidates. We may not be able to obtain regulatory approval for our product candidates or commercialize any products that may result from our development efforts, or may miss expected deadlines, if we are not able to maintain or secure agreements with such third parties on acceptable terms, if these third parties do not perform their services as contractually required, or if these third parties fail to timely transfer any regulatory information held by them to us.

We rely on entities outside of our control, which may include academic institutions, CROs, hospitals, clinics and other third-party strategic partners, to monitor, support, conduct and oversee preclinical studies and clinical trials of our current and future product candidates. As a result, we have less control over the timing and cost of these studies and the ability to recruit trial subjects than if we conducted these trials with our own personnel.

If we are unable to maintain or enter into agreements with these third parties on acceptable terms, or if any such engagement is terminated prematurely, we may be unable to enroll patients on a timely basis or otherwise conduct

our trials in the manner we anticipate. In addition, there is no guarantee that these third parties will devote adequate time and resources to our studies or perform as required by our contract or in accordance with regulatory requirements, including maintenance of clinical trial information regarding our product candidates. If these third parties fail to meet expected deadlines, fail to transfer to us any regulatory information in a timely manner, fail to adhere to protocols or fail to act in accordance with regulatory requirements or our agreements with them, or if they otherwise perform in a substandard manner or in a way that compromises the quality or accuracy of their activities or the data they obtain, then clinical trials of our product candidates may be extended or delayed with additional costs incurred, or our data may be rejected by the FDA, EMA or other regulatory agencies.

Ultimately, we are responsible for ensuring that each of our clinical trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities.

We and our CROs are required to comply with cGCP regulations and guidelines enforced by the FDA, the competent authorities of the member states of the European Union and comparable foreign regulatory authorities for products in clinical development. Regulatory authorities enforce these cGCP regulations through periodic inspections of clinical trial sponsors, principal investigators and clinical trial sites. If we or any of our CROs fail to comply with applicable cGCP regulations, the clinical data generated in our clinical trials may be deemed unreliable and our submission of marketing applications may be delayed or the FDA may require us to perform additional clinical trials before approving our marketing applications. Upon inspection, the FDA could determine that any of our clinical trials fail or have failed to comply with applicable cGCP regulations. In addition, our clinical trials must be conducted with product produced under the cGMP regulations enforced by the FDA, and our clinical trials may require a large number of test subjects. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process and increase our costs. Moreover, our business may be implicated if any of our CROs violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

If any of our clinical trial sites terminate for any reason, we may experience the loss of follow-up information on patients enrolled in our ongoing clinical trials unless we are able to transfer the care of those patients to another qualified clinical trial site. Further, our CROs are not required to work indefinitely or exclusively with us. Our existing agreements with our CROs may be subject to termination by the counterparty upon the occurrence of certain circumstances. If any CRO terminates its agreement with us, the research and development of the relevant product candidate would be suspended, and our ability to research, develop, and license future product candidates may be impaired. We may be required to devote additional resources to the development of our product candidates or seek a new collaboration partner, and the terms of any additional collaborations or other arrangements that we establish may not be favorable to us.

Switching or adding CROs or other suppliers can involve substantial cost and require extensive management time and focus. In addition, there is a natural transition period when a new CRO or supplier commences work. As a result, delays may occur, which can materially impact our ability to meet our desired clinical development timelines. If we are required to seek alternative supply arrangements, the resulting delays and potential inability to find a suitable replacement could materially and adversely impact our business.

We rely on third parties for various operational and administrative aspects of our business, including for certain cloud-based software platforms, which impact our financial, operational and research activities. If any of these third parties fail to provide timely, accurate and ongoing service or if the technology systems and infrastructure suffer outages that we are unable to mitigate, our business may be adversely affected.

We currently rely upon third party consultants and contractors to provide certain operational and administrative services. These services include tax advice and clinical and research consultation. The failure of any of these third parties to provide accurate and timely service may adversely impact our business operations. In addition, if such third-party service providers were to cease operations, temporarily or permanently, face financial distress or other business disruption, increase their fees or if our relationships with these providers deteriorate, we could suffer increased costs until an equivalent provider could be found, if at all, or we could develop internal capabilities, if ever. In addition, if we are unsuccessful in choosing or finding high-quality partners, if we fail to negotiate cost-

effective relationships with them, or if we ineffectively manage these relationships, it could have an adverse impact on our business and financial performance.

Further, our operations depend on the continuing and efficient operation of our information technology, communications systems and infrastructure, and on "cloud-based" platforms. Any of these systems and infrastructure are vulnerable to damage or interruption from earthquakes, vandalism, sabotage, terrorist attacks, floods, fires, power outages, telecommunications failures, and computer viruses or other deliberate attempts to harm the systems. The occurrence of a natural or intentional disaster, any decision to close a facility we are using without adequate notice, or particularly an unanticipated problem at a cloud-based virtual server facility, could result in harmful interruptions in our service, resulting in adverse effects to our business.

Future strategic partnerships may be important to us. We will face significant competition in seeking new strategic partners.

We have limited capabilities for drug development and manufacturing and do not yet have any capability for sales, marketing or distribution. For some of our product candidates, we may in the future determine to collaborate with pharmaceutical and biotechnology companies for development and potential commercialization of therapeutic products. The competition for strategic partners is intense. Our ability to reach a definitive agreement for collaboration will depend, among other things, upon our assessment of the strategic partner's resources and expertise, the terms and conditions of the proposed collaboration and the proposed strategic partner's evaluation of a number of factors. These factors may include the design or results of clinical trials, the likelihood of approval by the FDA or comparable foreign regulatory authorities, the potential market for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing products, the existence of uncertainty with respect to our ownership of technology, which can exist if there is a challenge to such ownership without regard to the merits of the challenge, and industry and market conditions generally. The strategic partner may also consider alternative product candidates or technologies for similar indications that may be available for collaboration and whether such collaboration could be more attractive than the one with us for our product candidate.

Strategic partnerships are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future strategic partners. Even if we are successful in entering into collaboration, the terms and conditions of that collaboration may restrict us from entering into future agreements with other potential collaborators.

If we are unable to reach agreements with suitable strategic partners on a timely basis, on acceptable terms, or at all, we may have to curtail the development of a product candidate, reduce or delay one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to fund and undertake development or commercialization activities on our own, we may need to obtain additional expertise and additional capital, which may not be available to us on acceptable terms or at all. If we fail to enter into strategic partnerships and do not have sufficient funds or expertise to undertake the necessary development and commercialization activities, we may not be able to further develop our product candidates or bring them to market or continue to develop our therapeutic platforms and our business may be materially and adversely affected. Any collaboration may be on terms that are not optimal for us, and we may not be able to maintain any new collaboration if, for example, development or approval of a product candidate is delayed, sales of an approved product candidate do not meet expectations or the partner terminates the collaboration. Any such collaboration, or other strategic transaction, may require us to incur non-recurring or other charges, and increase our near- and long-term expenditures and pose significant integration or implementation challenges or disrupt our management or business. Accordingly, although there can be no assurance that we will undertake or successfully complete any transactions of the nature described above, any transactions that we do complete may be subject to the foregoing or other risks and have a material and adverse effect on our business, financial condition, results of operations and prospects. Conversely, any failure to enter any collaboration or other strategic transaction that would be beneficial to us could delay the development and potential commercialization of our product candidates and have a negative impact on the competitiveness of any product candidate that reaches the market.

Table of Contents

Index to Financial Statements

If we are unable to maintain future strategic partnerships, or if these strategic partnerships are not successful, our business could be adversely affected.

Any future strategic partnerships we enter into may pose a number of risks, including the following:

- we may not be able to enter into critical strategic partnerships or enter them on favorable terms;
- strategic partners have significant discretion in determining the effort and resources that they will apply to such a partnership, and they may not perform their obligations as agreed or expected;
- strategic partners may not pursue development and commercialization of any product candidates that achieve regulatory approval or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in the partners' strategic focus or available funding, or external factors, such as an acquisition, that divert resources or create competing priorities;
- strategic partners may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- strategic partners could independently develop, or develop with third parties, products that compete directly or indirectly with our product candidates if the strategic partners believe that competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than our product candidates;
- product candidates discovered in collaboration with us may be viewed by our strategic partners as competitive with their own product candidates or products, which may cause strategic partners to cease to devote resources to the commercialization of our product candidates;
- a strategic partner with marketing and distribution rights to one or more of our product candidates that achieve regulatory approval may not commit sufficient resources to the marketing and distribution of such product candidates;
- disagreements with strategic partners, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or termination of the research, development or commercialization of product candidates, might lead to additional responsibilities for us with respect to product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- strategic partners 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 potential litigation;
- strategic partners may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability; and
- strategic partnerships may be terminated for the convenience of the partner and, if terminated, we could be required to raise additional capital to pursue further development or commercialization of the applicable product candidates.

Risks Related to Our Intellectual Property

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties.

Our success will depend in part on our ability to operate without infringing the proprietary rights of third parties. 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 future approved products or impair our competitive position.

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. We are aware of third party patents and patent applications containing claims directed to most of our areas of product development, which patents and applications could potentially be construed to cover our product candidates and the use thereof to treat cancer patients. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that we may be subject to claims of infringement of the patent rights of third parties. There is no assurance that there are not third-party patents or patent applications of which we are aware, but which we do not

believe are relevant to our business, which may, nonetheless, ultimately be found to limit our ability to make, use, sell, offer for sale or import our future approved products or impair our competitive position. Patents that we may ultimately be found to infringe could be issued to third parties. Third parties may have or obtain valid and enforceable patents or proprietary rights that could block us from developing product candidates using our technology. These patents may not expire before we receive marketing authorization for our product candidates, and they could delay the commercial launch of one or more future products. If our products were to be found to infringe any such patents, and we were unable to invalidate those patents, or if licenses for them are not available on commercially reasonable terms, or at all, our business, financial condition and results of operations could be materially harmed. Furthermore, even if a license is available, it may be non-exclusive, which could result in our competitors gaining access to the same intellectual property. Our failure to maintain a license to any technology that we require may also materially harm our business, financial condition and results of operations, and we would be exposed to a threat of litigation.

In the biotechnology industry, significant litigation and other proceedings regarding patents, patent applications, trademarks and other intellectual property rights have become commonplace both within and outside the United States including patent infringement lawsuits, oppositions, *inter partes* review (IPR) and post-grant review (PGR) proceedings before the United States Patent and Trademark Office (USPTO), or the applicable foreign patent counterpart. The types of situations in which we may become a party to such litigation or proceedings include:

- we may initiate litigation or other proceedings against third parties seeking to invalidate the patents held by those third parties, to obtain a judgment that our products or processes do not infringe those third parties' patents or to obtain a judgment that those parties' patents are unenforceable;
- if our competitors file patent applications that claim technology also claimed by us or our licensors, we or our licensors may be required to participate in derivation or opposition proceedings to determine the priority of invention, which could jeopardize our patent rights and potentially provide a third-party with a dominant patent position;
- if third parties initiate litigation claiming that our processes or products infringe their patent or other intellectual property rights or initiate other proceedings, including post-grant proceedings such as oppositions, IPRs or PGRRs, we will need to defend against such proceedings; and
- if a license to necessary technology is terminated, the licensor may initiate litigation claiming that our processes or products infringe or misappropriate their patent or other intellectual property rights and/or that we breached our obligations under the license agreement, and we would need to defend against such proceedings.

These lawsuits would be costly and could affect our results of operations and divert the attention of our management and scientific personnel. Some of our competitors may be able to sustain the cost of such litigation and proceedings more effectively than we can because of their substantially greater resources. There is a risk that a court would decide that we are infringing the third party's patents and would order us to stop the activities covered by the patents. In that event, we may not have a viable alternative to the technology protected by the patent and may need to halt work on the affected product candidate or cease commercialization of an approved product. In addition, there is a risk that a court will order us to pay third party damages or some other monetary award, depending upon the jurisdiction. An adverse outcome in any litigation or other proceeding could subject us to significant liabilities to third parties, potentially including treble damages and attorneys' fees if we are found to have willfully infringed, and we may be required to cease using the technology that is at issue or to license the technology from third parties. We may not be able to obtain any required licenses on commercially acceptable terms or at all. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or administrative proceedings, there is a risk that some of our confidential information could be compromised by disclosure. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise additional funds or on our business, results of operations, financial condition and prospects. Any of these outcomes could have a material adverse effect on our business.

If we are unable to obtain, maintain and enforce patent and trade secret protection for our product candidates and related technology, our business could be materially harmed.

Our strategy depends on our ability to identify, seek, obtain and maintain patent protection for our discoveries. As of August 31, 2019, our patent portfolio included four granted patents, two allowed applications, 127 pending

applications in active prosecution in 16 countries or regions, three pending Patent Cooperation Treaty (PCT) applications, and seven pending unpublished provisional applications. Our patent portfolio is relatively small compared to many large and more established pharmaceutical and biotechnology companies that have patent portfolios consisting of hundreds, and in some case even thousands, of granted patents. As our patent portfolio grows, we expect patent protection will continue to be an important part of our strategy. The patent protection process is expensive and time consuming, and we may not be able to file and prosecute all necessary or desirable patent applications, or maintain and enforce any patents that may issue from such patent applications, at a reasonable cost or in a timely manner or in all jurisdictions where protection may be commercially advantageous. 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. Moreover, 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 have licensed from third parties. Therefore, our owned or in-licensed patents and patent applications may not be prosecuted and enforced in a manner consistent with the best interests of 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. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our current and future product candidates in the United States or in other foreign countries or that effectively prevent third parties from commercializing competitive product candidates.

Moreover, the patent position of biotechnology companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. We may be subject to a third-party preissuance submission of prior art to the USPTO or foreign jurisdiction, and such prior art may affect the scope of any claims we ultimately get allowed or it may prevent our patent applications from issuing as patents. Further, the issuance of a patent does not ensure that it is valid or enforceable, nor is the issuance conclusive as to inventorship or the scope of any claims. Third parties may challenge the validity, enforceability or scope of our issued patents or claim that they should be inventors on such patents, and such patents may be narrowed, invalidated, circumvented, or deemed unenforceable and such third parties may gain rights to such patents. We could also become involved in reexamination, *inter partes* review, post-grant review, opposition or derivation proceedings, challenging our patent rights or the patent rights of others. In addition, changes in law may introduce uncertainty in the enforceability or scope of patents owned by biotechnology companies. If, our patents are narrowed, invalidated or held unenforceable, third parties may be able to commercialize our technology or products and compete directly with us without payment to us. There is no assurance that all potentially relevant prior art relating to our patents and patent applications has been found, and such prior art could potentially invalidate one or more of our patents or prevent a patent from issuing from one or more of our pending patent applications. There is also no assurance that there is not prior art of which we are aware, but which we do not believe affects the validity or enforceability of a claim in our patents and patent applications, which may, nonetheless, ultimately be found to affect the validity or enforceability of a claim. Furthermore, even if our patents are unchallenged, they may not adequately protect our intellectual property, provide exclusivity for our product candidates, prevent others from designing around our claims or provide us with a competitive advantage. The legal systems of certain countries do not favor the aggressive enforcement of patents, and the laws of foreign countries may not allow us to protect our inventions with patents to the same extent as the laws of the United States. Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in scientific literature lag behind actual discoveries, we cannot be certain that we were the first to make the inventions claimed in our issued patents or pending patent applications, or that we were the first to file for protection of the inventions set forth in our patents or patent applications. As a result, we may not be able to obtain or maintain protection for certain inventions. Therefore, the issuance, validity, enforceability, scope and commercial value of our patents in the United States and in foreign countries cannot be predicted with certainty and, as a result, any patents that we own or license may not provide sufficient protection against competitors. We may not be able to obtain or maintain patent protection from our pending patent applications, from those we may file in the future, or from those we may license from third parties. Moreover, even if we are able to obtain patent protection, such patent protection may be of insufficient scope to achieve our business objectives. In addition, the issuance of a patent does not give us the right to practice the patented invention. Third parties may have blocking patents that could prevent us from marketing our own patented product and practicing our own patented technology.

Table of Contents

Index to Financial Statements

Our patents covering one or more of our products or product candidates could be found invalid or unenforceable if challenged.

Any of our intellectual property rights could be challenged or invalidated despite measures we take to obtain patent and other intellectual property protection with respect to our product candidates and proprietary technology. For example, if we were to initiate legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable. In patent litigation in the United States and in some other jurisdictions, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld material information from the USPTO, or the applicable foreign counterpart, or made a misleading statement, during prosecution. A litigant or the USPTO itself could challenge our patents on this basis even if we believe that we have conducted our patent prosecution in accordance with the duty of candor and in good faith. The outcome following such a challenge is unpredictable.

With respect to challenges to the validity of our patents, for example, there might be invalidating prior art, of which we and the patent examiner were unaware during prosecution. 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 a product candidate. Even if a defendant does not prevail on a legal assertion of invalidity and/or unenforceability, our patent claims may be construed in a manner that would limit our ability to enforce such claims against the defendant and others. The cost of defending such a challenge, particularly in a foreign jurisdiction, and any resulting loss of patent protection could have a material adverse impact on one or more of our product candidates and our business.

Enforcing our intellectual property rights against third parties may also cause such third parties to file other counterclaims against us, which could be costly to defend, particularly in a foreign jurisdiction, and could require us to pay substantial damages, cease the sale of certain products or enter into a license agreement and pay royalties (which may not be possible on commercially reasonable terms or at all). Any efforts to enforce our intellectual property rights are also likely to be costly and may divert the efforts of our scientific and management personnel.

Our intellectual property rights will not necessarily provide us with competitive advantages.

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. The following examples are illustrative:

- others may be able to make compounds that are similar to our product candidates but that are not covered by the claims of the patents that we own or have exclusively licensed;
- others may independently develop similar or alternative technologies without infringing our intellectual property rights;
- issued patents that we own or have exclusively licensed may not provide us with any competitive advantages, or may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- we may obtain patents for certain compounds many years before we obtain marketing approval for products containing such compounds, and because patents have a limited life, which may begin to run prior to the commercial sale of the related product, the commercial value of our patents may be limited;
- 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 fail to develop additional proprietary technologies that are patentable;
- the laws of certain foreign countries may not protect our intellectual property rights to the same extent as the laws of the United States, or we may fail to apply for or obtain adequate intellectual property protection in all the jurisdictions in which we operate; and
- the patents of others may have an adverse effect on our business, for example by preventing us from marketing one or more of our product candidates for one or more indications.

Table of Contents

Index to Financial Statements

Any of the aforementioned threats to our competitive advantage could have a material adverse effect on our business.

We may become involved in lawsuits to protect or enforce our patents and trade secrets, which could be expensive, time consuming and unsuccessful.

Third parties may seek to market biosimilar versions of any approved products. Alternatively, third parties may seek approval to market their own products similar to or otherwise competitive with our product candidates. In these circumstances, we may need to defend or assert our patents, including by filing lawsuits alleging patent infringement. If we were to initiate legal proceedings against a third party to enforce a patent covering our product candidates, the defendant could counterclaim that the patent covering our product candidate is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for an invalidity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, written description or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. The outcome following legal assertions of invalidity and unenforceability is unpredictable. In any of these types of proceedings, a court or agency with jurisdiction may find our patents invalid or unenforceable. Even if we have valid and enforceable patents, these patents still may not provide protection against competing products or processes sufficient to achieve our business objectives.

Even after they have issued, our patents and any patents that we license may be challenged, narrowed, invalidated or circumvented. If our patents are invalidated or otherwise limited or will expire prior to the commercialization of our product candidates, other companies may be better able to develop products that compete with ours, which could adversely affect our competitive business position, business prospects and financial condition. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

The following are examples of litigation and other adversarial proceedings or disputes that we could become a party to involving our patents or patents licensed to us:

- we may initiate litigation or other proceedings against third parties to enforce our patent and trade secret rights;
- third parties may initiate litigation or other proceedings seeking to invalidate patents owned by or licensed to us or to obtain a declaratory judgment that their product or technology does not infringe our patents or patents licensed to us;
- third parties may initiate opposition, IPR or PGR proceedings challenging the validity or scope of our patent rights, requiring us and/or licensors to participate in such proceedings to defend the validity and scope of our patents;
- there may be a challenge or dispute regarding inventorship or ownership of patents or trade secrets currently identified as being owned by or licensed to us; or
- third parties may seek approval to market biosimilar versions of our future approved products prior to expiration of relevant patents owned by or licensed to us under the Biologics Price Competition and Innovation Act of 2009, requiring us to defend our patents, including by filing lawsuits alleging patent infringement.

These lawsuits and proceedings would be costly and could affect our results of operations and divert the attention of our managerial and scientific personnel. Adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our licensors can. There is a risk that a court or administrative body would decide that our patents are invalid or not infringed or trade secrets not misappropriated by a third party's activities, or that the scope of certain issued claims must be further limited. An adverse outcome in a litigation or proceeding involving our own patents or trade secrets could limit our ability to assert our patents or trade secrets against these or other competitors, affect our ability to receive royalties or other licensing consideration from our licensees, and may curtail or preclude our ability to exclude third parties from making, using and selling similar or competitive products. Any of these occurrences could adversely affect our competitive business position, business prospects and financial condition.

Table of Contents

Index to Financial Statements

We may not be able to prevent, alone or with our licensors, infringement or misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States. Any litigation or other proceedings to enforce our intellectual property rights may fail, and even if successful, may result in substantial costs and distract our management and other employees.

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 an adverse effect on the price of our common stock.

The degree of future protection for our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. For example:

- others may be able to develop a platform that is similar to, or better than, ours in a way that is not covered by the claims of our patents;
- others may be able to make compounds that are similar to our product candidates but that are not covered by the claims of our patents;
- we might not have been the first to make the inventions covered by patents or pending patent applications;
- we might not have been the first to file patent applications for these inventions;
- any patents that we obtain may not provide us with any competitive advantages or may ultimately be found invalid or unenforceable; or
- we may not develop additional proprietary technologies that are patentable or that afford meaningful trade secret protection.

Patent terms may be inadequate to protect our competitive position on our product candidates for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired, we may be open to competition from competitive products, including biosimilars. 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 owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If we do not obtain protection under the Hatch-Waxman amendments and similar foreign legislation for extending the term of patents covering each of our product candidates, our business may be materially harmed.

Depending upon the timing, duration and conditions of FDA marketing approval of our product candidates, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent term extension of up to five years for a patent covering an approved product as compensation for effective 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 also may be available in certain foreign countries upon regulatory approval of our product candidates. However, we may not receive an extension if we fail to apply within applicable deadlines, fail to apply prior to expiration of relevant patents or otherwise fail to satisfy applicable requirements. Moreover, the length of the extension could be less than we request. If we are unable to obtain patent term extension or the term of any such extension is less than we request, the period during which we can enforce our patent rights for that product will be shortened and our competitors may obtain approval to market competing products sooner. As a result, our revenue

from applicable products could be reduced, possibly materially. Further, if this occurs, our competitors may take advantage of our investment in development and trials by referencing our clinical and preclinical data and launch their product earlier than might otherwise be the case.

If we are unable to protect the confidentiality of our trade secrets and proprietary information, the value of our technology and products could be adversely affected.

In addition to patent protection, we also rely on other proprietary rights, including protection of trade secrets, and other proprietary information. For example, we treat our proprietary computational technologies, including unpatented know-how and other proprietary information, as trade secrets. Trade secrets and know-how can be difficult to protect. Trade secrets and know-how can also in some instances be independently derived or reverse-engineered by a third party. We maintain the confidentiality of trade secrets and proprietary information, in part by entering into confidentiality agreements with our employees, consultants, strategic partners and others upon the commencement of their relationships with us. These agreements require that all confidential information developed by the individual or made known to the individual by us during the course of the individual's relationship with us be kept confidential and not disclosed to third parties. Our agreements with employees and our personnel policies also provide that any inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. However, we may not obtain these agreements in all circumstances, and even when we obtain these agreements, individuals with whom we have these agreements may not comply with their terms. Any of the parties to these agreements may breach such agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. In the event of unauthorized use or disclosure of our trade secrets or proprietary information, these agreements, even if obtained, may not provide meaningful protection, particularly for our trade secrets or other confidential information. We may also become involved in inventorship disputes relating to inventions and patents developed by our employees or consultants under such agreements. To the extent that our employees, consultants or contractors use technology or know-how owned by third parties in their work for us, disputes may arise between us and those third parties as to the rights in related inventions. To the extent that an individual who is not obligated to assign rights in intellectual property to us is rightfully an inventor of intellectual property, we may need to obtain an assignment or a license to that intellectual property from that individual, or a third party or from that individual's assignee. Such assignment or license may not be available on commercially reasonable terms or at all.

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 in the United States and certain foreign jurisdictions are less willing or unwilling to protect trade secrets. The disclosure of our trade secrets would impair our competitive position and may materially harm our business, financial condition and results of operations. Costly and time consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to maintain trade secret protection could adversely affect our competitive business position. In addition, 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 third party, or those to whom they communicate such technology or information, from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, or if we otherwise lose protection for our trade secrets or proprietary know-how, the value of this information may be greatly reduced and our business and competitive position could be harmed. Adequate remedies may not exist in the event of unauthorized use or disclosure of our proprietary information.

We may be subject to claims that we or our employees or consultants have wrongfully used or disclosed alleged trade secrets or other proprietary information of our employees' or consultants' former employers or their clients.

We employ individuals who were previously or concurrently employed at research institutions and/or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. We may be subject to claims that these employees, or we, have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers, or that patents and applications we have filed to protect inventions of these employees, even those related to one or more of our product candidates, are rightfully owned by their former or concurrent employer. Litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, trade secrets or other proprietary information could be awarded to a third party, and we could be required to obtain a license from such third party to commercialize our technology or products. Such license may not be available on commercially reasonable terms or at all. A loss of key research

personnel or their work product could limit our ability to commercialize, or prevent us from commercializing, our current or future technologies or product candidates, which could materially harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

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

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents or applications will be due to the USPTO and various foreign patent offices at various points over the lifetime of our patents or applications. We have systems in place to remind us to pay these fees, and we rely on our outside patent annuity service to pay these fees automatically when due, but we must notify the provider of any new patents or applications. Additionally, the USPTO and various foreign patent offices require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with rules applicable to the particular jurisdiction. However, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If such an event were to occur, it could have a material adverse effect on our business.

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

Although we are not currently experiencing any claims challenging the inventorship or ownership of our patents, we may in the future be subject to claims that former employees, strategic partners or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. While it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. For example, the assignment of intellectual property rights may not be self-executing or the assignment agreements may be breached, or we may have inventorship disputes arise from conflicting obligations of consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Patent protection and patent prosecution for some of our product candidates may be dependent on, and the ability to assert patents and defend them against claims of invalidity may be maintained by, third parties.

There may be times in the future when certain patents that relate to our product candidates or any approved products are controlled by our licensees or licensors. Although we may, under such arrangements, have rights to consult with our strategic partners on actions taken as well as back-up rights of prosecution and enforcement, we have in the past and may in the future relinquish rights to prosecute and maintain patents and patent applications within our portfolio as well as the ability to assert such patents against infringers.

If any current or future licensee or licensor with rights to prosecute, assert or defend patents related to our product candidates fails to appropriately prosecute and maintain patent protection for patents covering any of our product candidates, or if patents covering any of our product candidates are asserted against infringers or defended against claims of invalidity or unenforceability in a manner which adversely affects such coverage, our ability to develop and commercialize any such product candidate may be adversely affected and we may not be able to prevent competitors from making, using and selling competing products.

Changes in patent laws or patent jurisprudence could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

The patent positions of pharmaceutical and biotechnology companies can be highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. Changes in either the patent laws or in the interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property. We cannot predict the breadth of claims that may be allowed or found to be enforceable in our

patents or in third-party patents. The United States has enacted and is currently implementing wide-ranging patent reform legislation. Further, recent U.S. Supreme Court rulings have either narrowed the scope of patent protection available in certain circumstances or weakened 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 validity, scope and value of patents, once obtained.

For our U.S. patent applications containing a priority claim after March 16, 2013, there is a greater level of uncertainty in the patent law. In September 2011, the Leahy-Smith America Invents Act, also known as the America Invents Act (AIA), was signed into law. The AIA includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. The AIA and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have an adverse effect on our business. An important change introduced by the AIA is that, as of March 16, 2013, the United States transitioned to a “first-to-file” system for deciding which party should be granted a patent when two or more patent applications are filed by different parties disclosing or claiming the same invention. A third party that has filed, or does file a patent application in the USPTO after March 16, 2013 but before us, could be awarded a patent covering a given invention, even if we had made the invention before it was made by the third party. This requires us to be cognizant going forward of the time from invention to filing of a patent application.

Among some of the other changes introduced by the AIA are changes that limit where a patentee may file a patent infringement suit and providing opportunities for third parties to file third party submissions of prior art to the USPTO during patent prosecution and to challenge any issued patent in the USPTO (*e.g.*, via post-grant reviews or *inter partes* reviews). This applies to all of our U.S. patents, even those issued before March 16, 2013. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States federal court necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action.

Depending on decisions by the U.S. Congress, the U.S. federal courts, the USPTO or similar authorities in foreign jurisdictions, the laws and regulations governing patents could change in unpredictable ways that may weaken our and our licensors’ ability to obtain new patents or to enforce existing patents we and our licensors or partners may obtain in the future.

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

Filing, prosecuting and defending patents on product candidates 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 current or future products, if any, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing. Recent United States Supreme Court cases have narrowed the scope of what is considered patentable subject matter, for example, in the areas of software and diagnostic methods involving the association between treatment outcome and biomarkers. This could impact our ability to patent certain aspects of our technology in the United States.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biotechnology products, 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 generally. 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.

Additionally, the requirements for patentability may differ in certain countries, particularly developing countries. For example, unlike other countries, China has a heightened requirement for patentability, and specifically requires a detailed description of medical uses of a claimed drug. In India, unlike the United States, there is no link between regulatory approval of a drug and its patent status, and patenting of medical uses of a claimed drug are prohibited. In addition to India, certain countries in Europe and developing countries, including China, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In those countries, we and our licensors may have limited remedies if patents are infringed or if we or our licensors are compelled to grant a license to a third party, which could materially diminish the value of those patents. This could limit our potential revenue opportunities. Accordingly, our efforts to enforce intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license.

We will need to obtain FDA approval for any proposed product candidate names, and any failure or delay associated with such approval may adversely affect our business.

Any proprietary name or trademark we intend to use for our product candidates will require approval from the FDA regardless of whether we have secured a formal trademark registration from the USPTO. The FDA typically conducts a review of proposed product candidate names, including an evaluation of the potential for confusion with other product names and potential pharmacy dispensing errors. The FDA may also object to a product name if it believes the name inappropriately implies certain medical claims or contributes to an overstatement of efficacy. If the FDA objects to any product candidate names we propose, we may be required to adopt an alternative name for our product candidates. If we adopt an alternative name, we would lose the benefit of any existing trademark applications for such product candidate and may be required to expend significant additional resources in an effort to identify a suitable product name that would qualify under applicable trademark laws, not infringe the existing rights of third parties and be acceptable to the FDA. We may be unable to build a successful brand identity for a new trademark in a timely manner or at all, which would limit our ability to commercialize our product candidates.

Some of our discovery programs include antibodies that are licensed from third parties pursuant to limited research licenses. If we decide to further develop or commercialize these discovery programs as future product candidates, we may need to exercise our option to enter into a commercial license with one or more of these third parties. If we are unable to successfully enter into those commercial licenses or if we breach the terms of our existing research licenses or future commercial licenses, we would not have the ability to continue the development and potential commercialization of such discovery programs.

We have in-licensed certain antibodies for our discovery programs from third parties. Under these license agreements, we are able to research and initially develop discovery programs and are required to make certain annual payments. We also have the option to negotiate or enter into commercial license agreements with these third parties if we elect to continue development or commercialization of any product candidates incorporating the in-licensed antibodies. If we exercise our option to negotiate or enter into any commercial licenses with these third parties, we will likely be subject to various additional obligations, which may include obligations with respect to funding, development and commercialization activities, and payment obligations upon achievement of certain milestones and royalties on product sales. If any of our existing antibody research licenses or future commercial licenses are terminated or breached, we may:

- lose our rights or options to research, develop or commercialize certain of our future product candidates;
- not be able to secure patent or trade secret protection for certain of our future product candidates;
- experience significant delays in the development or commercialization of certain of our future product candidates;

Table of Contents

Index to Financial Statements

- not be able to obtain other licenses that may allow us to continue to progress the applicable programs on acceptable terms, if at all; or
- incur liability for damages.

Additionally, even if not terminated or breached, our intellectual property licenses may be subject to disagreements over contract interpretation which could narrow the scope of our rights to the relevant intellectual property or technology or increase our financial or other obligations. If we experience any of the foregoing, it could have a materially adverse effect on our business.

Risks Related to Our Common Stock and this Offering

Our share price is likely to be volatile and the market price of our common stock after this offering may drop below the price you pay.

You should consider an investment in our common stock as risky and invest only if you can withstand a significant loss and wide fluctuations in the market value of your investment. You may be unable to sell your common stock at or above the initial public offering price due to fluctuations in the market price of our common stock arising from changes in our operating performance or prospects. In addition, the stock market has recently experienced significant volatility, particularly with respect to pharmaceutical, biotechnology and other life sciences company stocks. The volatility of pharmaceutical, biotechnology and other life sciences company stocks often does not relate to the operating performance of the companies represented by the stock. Some of the factors that may cause the market price of our common stock to fluctuate or decrease below the price paid in this offering include:

- results and timing of our preclinical studies and clinical trials and studies and trials of our competitors' products;
- failure or discontinuation of any of our development programs;
- issues in manufacturing our product candidates or future approved products;
- regulatory developments or enforcement in the United States and foreign countries with respect to our product candidates or our competitors' products;
- competition from existing products or new products that may emerge;
- actual or anticipated changes in our growth rate relative to our competitors;
- developments or disputes concerning patents or other proprietary rights;
- introduction of technological innovations or new commercial products by us or our competitors;
- announcements by us, our strategic partners or our competitors of significant acquisitions, strategic partnerships, joint ventures, or capital commitments;
- actual or anticipated changes in estimates or recommendations by securities analysts, if any cover our common stock;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- public concern over our product candidates or any future approved products;
- litigation;
- future sales of our common stock by us, our insiders or our other stockholders;
- expiration of market stand-off or lock-up agreements;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- additions or departures of key personnel;
- changes in the structure of health care payment systems in the United States or overseas;
- failure of any of our product candidates, if approved, to achieve commercial success;
- economic and other external factors or other disasters or crises;
- period-to-period fluctuations in our financial condition and results of operations, including the timing of receipt of any milestone or other payments under commercialization or licensing agreements;
- announcements or expectations of additional financing efforts;
- general market conditions and market conditions for biotechnology stocks;
- overall fluctuations in U.S. equity markets; and
- other factors that may be unanticipated or out of our control.

Table of Contents

Index to Financial Statements

In addition, in the past, when the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit and divert the time and attention of our management, which could seriously harm our business.

An active, liquid and orderly trading market for our common stock may not develop or be sustained. As a result, it may be difficult for you to sell your shares of our common stock.

There is currently no public market for our common stock. An active trading market for our shares may not develop or be sustained. If an active market for our common stock does not continue, it may be difficult for our stockholders to sell their shares without depressing the market price for the shares or sell their shares at or above the prices at which they acquired their shares or sell their shares at the time they would like to sell. The initial public offering price of our common stock was determined through negotiations between us and the underwriters. The initial public offering price may not be indicative of the market price of our common stock after the offering, and the market value of our common stock may decrease from the initial public offering price. Any inactive trading market for our common stock may also impair our ability to raise capital to continue to fund our operations by selling shares and may impair our ability to acquire other companies or technologies by using our shares as consideration.

We are controlled by Haldor Topsøe Holding A/S and a concentrated group of stockholders, whose interests in our business may conflict with yours.

Upon completion of this offering, Haldor Topsøe Holding A/S (HTH), together with other holders of 5% or more of our outstanding capital stock and their respective affiliates, will beneficially own approximately 15,470,658 shares, or 53.5%, of our outstanding capital stock, which includes 9,039,453 shares, or 40.2%, of our voting common stock, which does not reflect participation in this offering by such stockholders. Certain of our directors and existing stockholders, including certain stockholders affiliated with our directors and that beneficially own more than 5% of our outstanding capital stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price and on the same terms as the other purchasers in the offering. As a result, HTH and other holders of 5% or more of our outstanding capital stock and their respective affiliates, will beneficially own approximately 80.1% of our outstanding capital stock, which includes 74.4% of our voting common stock, upon the completion of this offering. The previously discussed ownership percentages upon completion of this offering are based upon the initial public offering price of $16.00 per share and assume no exercise of the underwriters' option to purchase additional shares and no exercise of outstanding options. Accordingly, our principal stockholders will be able to control most matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions, including mergers and sales of all or substantially all of our assets. The interests of these principal stockholders may not always coincide with your interests or the interests of other stockholders and they may act in a manner that advances their best interests and not necessarily those of other stockholders. For example, our concentration of ownership could have the effect of delaying or preventing a change in control or otherwise discouraging a potential acquirer from attempting to obtain control of us, which in turn could cause the market price of our common stock to decline or prevent our stockholders from realizing a premium over the market price for their shares of our common stock.

In addition, pursuant to nominating agreements entered into between us and each of (i) HTH, (ii) Baker Brothers Life Sciences L.P. and 667, L.P. (together, Baker Brothers) and (iii) Redmile Biopharma Investments II, L.P., RAF, L.P. and Redmile Strategic Master Fund, LP (together, Redmile), for up to 12 years following the completion of this offering, so long as HTH, Baker Brothers and Redmile, together with their respective affiliates, each beneficially own certain specified amounts of our capital stock, we will have the obligation to support the nomination of, and to cause our board of directors to include in the slate of nominees recommended to our stockholders for election, (i) two individuals designated by HTH, (ii) one individual designated by Baker Brothers and (iii) one individual designated by Redmile, subject to certain customary conditions and exceptions. For more information regarding the nominating agreements, see the section titled "Management—Board Composition." Each of HTH, Baker Brothers and Redmile, and their respective affiliates, may therefore have influence over management and control over matters requiring stockholder approval, including the annual election of directors and significant corporate transactions following the completion of this offering.

Table of Contents

Index to Financial Statements

The dual class structure of our common stock may limit your ability to influence corporate matters and may limit your visibility with respect to certain transactions.

The dual class structure of our common stock may also limit your ability to influence corporate matters. Holders of our common stock are entitled to one vote per share, while holders of our non-voting common stock are not entitled to any votes. Nonetheless, each share of our non-voting common stock may be converted at any time into one share of our common stock at the option of its holder by providing written notice to us, subject to the limitations provided for in our amended and restated certificate of incorporation to become effective upon the completion of this offering. Consequently, if holders of our non-voting common stock following this offering exercise their option to make this conversion, this will have the effect of increasing the relative voting power of those prior holders of our non-voting common stock, and correspondingly decreasing the voting power of the holders of our common stock, which may limit your ability to influence corporate matters. Additionally, stockholders who hold, in the aggregate, more than 10% of our common stock and non-voting common stock, but 10% or less of our common stock, and are not otherwise a Company insider, may not be required to report changes in their ownership due to transactions in our non-voting common stock pursuant to Section 16(a) of the Securities Exchange Act of 1934, as amended (the Exchange Act), and may not be subject to the short-swing profit provisions of Section 16(b) of the Exchange Act.

A significant portion of our total outstanding common stock is restricted from immediate resale but may be sold into the market in the near future. This could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of our common stock in the public market could occur in the future. These sales, or the perception in the market that the holders of a large number of common stock intend to sell shares, could reduce the market price of our common stock and could impair our ability to raise additional capital through the sale of equity securities in the future. Immediately after completing this offering, we will have 28,891,945 outstanding shares of common stock and non-voting common stock based on the number of shares outstanding as of June 30, 2019 (including convertible preferred stock on an as-converted basis as well as 3,026,449 shares of our Series C convertible preferred stock issued after June 30, 2019 and 116,518 shares of restricted common stock subject to forfeiture, and assuming no exercise of the underwriters' option to purchase additional shares). This figure includes the shares sold in this offering, which are eligible to be resold in the public market immediately (unless such shares are held by "affiliates" as defined in Rule 144 under the Securities Act of 1933, as amended (the Securities Act)), and the remaining 17,954,445 shares that are currently restricted under securities laws or as a result of lock-up agreements but will be able to be resold as described in the "Shares Eligible for Future Sale" section of this prospectus. Moreover, holders of an aggregate of 17,494,123 shares of common stock (including common stock issuable upon conversion of our non-voting common stock) have rights, subject to certain conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. Certain of the holders of such registration right may not elect to sell any shares in this offering and therefore those holders could require us to file additional registration statements covering their shares in the future. We also intend to file a registration statement on Form S-8 to register all common stock that we may issue under our stock option plan, and, they therefore can be freely sold in the public market upon issuance and once vested, subject to the lock-up agreements described in the section titled "Underwriting."

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

Table of Contents

Index to Financial Statements

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our share price and trading volume could decline.

The trading market for our common stock will depend on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. We cannot assure you that analysts will cover us or provide favorable coverage. If no or few securities or industry analysts commence coverage of us, the trading price for our stock would be negatively impacted. If one or more of the analysts who cover us downgrade our stock or change their opinion of our common stock, our share price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

Participation in this offering by certain of our directors and existing stockholders would reduce the available public float of our shares.

Certain of our directors and existing stockholders, including stockholders affiliated with our directors and who own 5% or more of our outstanding capital stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price. Such purchases would reduce the available public float of our shares because such directors and stockholders may be restricted from selling the shares by restrictions under applicable securities laws. As a result, the purchase of shares by such directors and stockholders in this offering may reduce the liquidity of our common stock relative to what it would have been had these shares been purchased by investors that were not directors or existing stockholders.

If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results or prevent fraud. As a result, stockholders could lose confidence in our financial and other public reporting, which would harm our business and the trading price of our common stock.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation, could cause us to fail to meet our reporting obligations. In addition, any testing by us conducted in connection with Section 404 of the Sarbanes-Oxley Act of 2002 (the Sarbanes-Oxley Act) or any subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal controls over financial reporting that are deemed to be significant deficiencies or material weaknesses or that may require prospective or retroactive changes to our financial statements or identify other areas for further attention or improvement. We have identified deficiencies in the past which we have taken steps to address. However, our efforts to remediate previous deficiencies may not be effective or prevent any future deficiency in our internal control over financial reporting. Inferior internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our common stock.

In connection with our evaluation of our internal controls over financial reporting, we expect to upgrade our finance and accounting systems. If we are unable to accomplish these objectives in a timely and effective manner, our ability to comply with the financial reporting requirements and other rules that apply to reporting companies could be adversely impacted. Any failure to maintain effective internal control over financial reporting could have a material adverse effect on our business, financial condition and results of operations and the trading price of our common stock.

We will be required to disclose material changes made in our internal controls and procedures on a quarterly basis and our management will be required to assess the effectiveness of these controls annually. Beginning with our second annual report on Form 10-K after we become a public company, we will be required to make a formal assessment of the effectiveness of our internal control over financial reporting, and once we cease to be an emerging growth company, we will be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. However, for as long as we are an “emerging growth company” under the Jumpstart Our Business Startups Act of 2012 (the JOBS Act), our independent registered public accounting firm will not be required to attest to the effectiveness of our internal controls over financial reporting pursuant to Section 404.

To achieve compliance with Section 404 within the prescribed period, we will be engaging in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will

Table of Contents

Index to Financial Statements

need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of our internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are designed and operating effectively, and implement a continuous reporting and improvement process for internal control over financial reporting.

We could be an "emerging growth company" for up to five years. An independent assessment of the effectiveness of our internal controls could detect problems that our management's assessment might not. In addition, our management and independent registered public accounting firm did not perform an evaluation of our internal control over financial reporting as of December 31, 2017 or December 31, 2018 in accordance with the provisions of the Sarbanes-Oxley Act. Had we and our independent registered public accounting firm performed such an evaluation, control deficiencies may have been identified by management or our independent registered public accounting firm, and those control deficiencies could have also represented one or more material weaknesses. Undetected material weaknesses in our internal controls could lead to financial statement restatements and require us to incur the expense of remediation.

We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to corporate governance standards.

As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company, and these expenses may increase even more after we are no longer an "emerging growth company." Our management and other personnel will need to devote a substantial amount of time and incur substantial expense in connection with compliance initiatives. For example, in anticipation of becoming a public company, we will need to adopt additional internal controls and disclosure controls and procedures, retain a transfer agent and adopt an insider trading policy. As a public company, we will bear all of the internal and external costs of preparing and distributing periodic public reports in compliance with our obligations under the securities laws.

In addition, regulations and standards relating to corporate governance and public disclosure, including the Sarbanes-Oxley Act and the related rules and regulations implemented by the SEC, and the Nasdaq Stock Market LLC (Nasdaq), have increased legal and financial compliance costs and will make some compliance activities more time consuming. We are currently evaluating these rules, and cannot predict or estimate the amount of additional costs we may incur or the timing of such costs. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment will result in increased general and administrative expenses and may divert management's time and attention from our other business activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to practice, regulatory authorities may initiate legal proceedings against us and our business may be harmed. In connection with this offering, we intend to increase our directors' and officers' insurance coverage which will increase our insurance cost. In the future, it may be more expensive or more difficult for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors, particularly to serve on our audit committee and compensation committee, and qualified executive officers.

Under the corporate governance standards of Nasdaq, a majority of our board of directors and each member of our audit committee must be an independent director no later than the first anniversary of the completion of this offering. We may encounter difficulty in attracting qualified persons to serve on our board of directors and the audit committee, and our board of directors and management may be required to divert significant time and attention and resources away from our business to identify qualified directors. If we fail to attract and retain the required number of independent directors, we may be subject to the delisting of our common stock from the Nasdaq Global Select Market.

We are an "emerging growth company," and any decision on our part to comply only with certain reduced reporting and disclosure requirements applicable to emerging growth companies could make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act. For as long as we continue to be an emerging growth company, we may choose to take advantage of exemptions from various reporting requirements applicable to

other 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, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could be an "emerging growth company" for up to five years following the completion of this offering, although, if we have more than $1.07 billion in annual revenue, if the market value of our common stock held by non-affiliates exceeds $700 million as of June 30 of any year, or we issue more than $1.0 billion of non-convertible debt over a three-year period before the end of that five-year period, we would cease to be an "emerging growth company" as of the following December 31. Investors could find our common stock less attractive if we choose to rely on these exemptions. In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. We have elected to use this extended transition period until the earlier of the date that we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements may not be comparable to companies that comply with the new or revised accounting standards as of public company effective dates. If some investors find our common stock less attractive as a result of any of our reliance on these exemptions, there may be a less active trading market for our common stock and our share price may be more volatile.

We do not anticipate paying cash dividends, and accordingly, stockholders must rely on share appreciation for any return on their investment.

We have never paid any dividends on our capital stock. We currently intend to retain our future earnings, if any, to fund the development and growth of our businesses and do not anticipate that we will declare or pay any cash dividends on our capital stock in the foreseeable future. See the section titled "Dividend Policy." As a result, capital appreciation, if any, of our common stock will be your sole source of gain on your investment for the foreseeable future. Investors seeking cash dividends should not invest in our common stock.

Our management team will have broad discretion to use the net proceeds from this offering and its investment of these proceeds may not yield a favorable return. They may invest the proceeds of this offering in ways with which investors disagree.

Our management team will have broad discretion in the application of the net proceeds from this offering and could spend or invest the proceeds in ways with which our stockholders disagree. Accordingly, investors will need to rely on our management team's judgment with respect to the use of these proceeds. We intend to use the proceeds from this offering in the manner described in the section titled "Use of Proceeds." The failure by management to apply these funds effectively could negatively affect our ability to operate and grow our business.

We cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. In addition, the amount, allocation and timing of our actual expenditures will depend upon numerous factors, including any milestone payments received from any future strategic partnerships and royalties on sales of any future approved product. Accordingly, we will have broad discretion in using these proceeds. Until the net proceeds are used, they may be placed in investments that do not produce significant income or that may lose value.

Investors in this offering will pay a much higher price than the book value of our common stock and therefore you will incur immediate and substantial dilution of your investment.

The initial public offering price will be substantially higher than the net tangible book value per common share based on the total value of our tangible assets less our total liabilities immediately following this offering. Therefore, if you purchase common stock in this offering, you will experience immediate and substantial dilution of approximately $7.65 per share, representing the difference between our pro forma as adjusted net tangible book value per share after giving effect to this offering at the initial public offering price of $16.00 per share. As of June 30, 2019, we have outstanding stock options to purchase 1,929,283 shares of our common stock, certain of which have exercise prices below the initial public offering price. To the extent these outstanding options are ultimately exercised, you will experience further dilution. See the section titled "Dilution."

Table of Contents

Index to Financial Statements

Delaware law and provisions in our amended and restated certificate of incorporation and bylaws that will become effective upon the completion of this offering might discourage, delay, or prevent a change in control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Provisions in our amended and restated certificate of incorporation and bylaws that will become effective upon the completion of this offering may discourage, delay, or prevent a merger, acquisition, or other change in control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our charter documents will:

- establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered three year terms;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- provide that our directors may only be removed for cause;
- eliminate cumulative voting in the election of directors;
- authorize our board of directors to issue shares of convertible preferred stock and determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval;
- provide our board of directors with the exclusive right to elect a director to fill a vacancy or newly created directorship;
- permit stockholders to only take actions at a duly called annual or special meeting and not by written consent;
- prohibit stockholders from calling a special meeting of stockholders;
- require that stockholders give advance notice to nominate directors or submit proposals for consideration at stockholder meetings;
- authorize our board of directors, by a majority vote, to amend the bylaws; and
- require the affirmative vote of at least 66 2/3% or more of the outstanding shares of common stock to amend many of the provisions described above.

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

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

Our amended and restated bylaws that will become effective upon the completion of this offering provide that the Court of Chancery of the State of Delaware 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 bylaws that will become effective upon the completion of this offering provide that the Court of Chancery of the State of Delaware is the exclusive forum for:

- any derivative action or proceeding under Delaware statutory or common law brought on our behalf;
- any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders;
- any action asserting a claim against us arising under the DGCL, our amended and restated certificate of incorporation or our amended and restated bylaws; and
- any action asserting a claim against us that is governed by the internal-affairs doctrine.

Table of Contents

Index to Financial Statements

This exclusive forum provision will not apply to any causes of action arising under the Securities Act or the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. This exclusive-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 lawsuits against us and our directors, officers and other employees. Any person or entity purchasing or otherwise acquiring any interest in any of our securities shall be deemed to have notice of and consented to this provision. If a court were to find this exclusive-forum provision in our amended and restated bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could seriously harm our business. Nothing in our amended and restated bylaws precludes stockholders that assert claims under the Securities Act or the Exchange Act from bringing such claims in state or federal court, subject to applicable law.

Table of Contents

Index to Financial Statements

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that involve risks and uncertainties. All statements other than statements of historical facts contained in this prospectus are forward-looking statements. In some cases, you can identify forward-looking statements by words such as “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “seek,” “should,” “target,” “will” or “would,” or the negative of these words or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- the timing of the initiation, progress and potential results of our preclinical studies, clinical trials and our discovery programs;
- our ability to utilize our IgM antibody platform to generate and advance additional product candidates;
- our ability to advance product candidates into, and successfully complete, clinical trials;
- the timing or likelihood of regulatory filings and approvals;
- our estimates of the number of patients who suffer from the diseases we are targeting and the number of patients that may enroll in our clinical trials;
- the commercializing of our product candidates, if approved;
- our ability and the potential to successfully manufacture and supply our product candidates for clinical trials and for commercial use, if approved;
- future strategic arrangements and/or collaborations and the potential benefits of such arrangements;
- our anticipated use of our existing resources and the proceeds from this offering;
- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing and our ability to obtain additional capital;
- the sufficiency of our existing cash and cash equivalents to fund our future operating expenses and capital expenditure requirements;
- our ability to retain the continued service of our key personnel and to identify, hire and retain additional qualified professionals;
- the implementation of our business model, strategic plans for our business and product candidates;
- the scope of protection we are able to establish and maintain for intellectual property rights, including our IgM platform, product candidates and discovery programs;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;
- the pricing, coverage and reimbursement of our product candidates, if approved; and
- developments relating to our competitors and our industry, including competing product candidates and therapies.

These forward-looking statements are based on our management’s current expectations, estimates, forecasts and projections about our business and the industry in which we operate, and management’s beliefs and assumptions and are not guarantees of future performance or development. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in the section titled “Risk Factors” and elsewhere in this prospectus. Moreover, we operate in a very competitive and rapidly changing environment, and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this prospectus may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based on information available to us as of the date of this prospectus. While we believe that information provides a reasonable basis for these statements, that information may be limited or incomplete. Our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all relevant information.

Table of Contents

Index to Financial Statements

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance, or events and circumstances reflected in the forward-looking statements will be achieved or occur. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this prospectus to conform these statements to new information, actual results or changes in our expectations, except as required by law.

You should read this prospectus, as well as the documents that we reference in this prospectus and have filed with the SEC as exhibits to the registration statement of which this prospectus is a part, with the understanding that our actual future results, levels of activity, performance, and events and circumstances may be materially different from what we expect.

Table of Contents

Index to Financial Statements

MARKET, INDUSTRY AND OTHER DATA

This prospectus contains estimates, projections and other information concerning our business, our industry and the markets for our product candidates, including data regarding the estimated size of such markets and the incidence of certain medical conditions. We obtained the industry, market and similar data set forth in this prospectus from our internal estimates and research and from academic and industry research, publications, surveys and studies conducted by third parties, including governmental agencies. In some cases, we do not expressly refer to the sources from which this data is derived. 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. While we believe that the data we use from third parties are reliable, we have not separately verified these data. Further, while we believe our internal research is reliable, such research has not been verified by any third party. You are cautioned not to give undue weight to any such information, projections and estimates.

Table of Contents

Index to Financial Statements

USE OF PROCEEDS

We estimate that the net proceeds from this offering will be approximately $158.6 million, or $183.0 million if the underwriters exercise their option to purchase additional shares of common stock from us in full, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, based upon the initial public offering price of $16.00 per share.

The principal purposes of this offering are to obtain additional capital to support our operations, establish a public market for our common stock and facilitate our future access to the public capital markets. We expect to use the net proceeds from this offering, together with our existing cash and cash equivalents, as follows:

- approximately $45.0 million to fund the clinical development of IGM-2323 for the treatment of relapsed/refractory B cell NHL patients through the dose escalation portion and into expansion of our Phase 1 clinical trial;
- approximately $25.0 million to fund IND-enabling studies and the clinical development of our DR5 IgM antibody through the dose escalation portion of a Phase 1 clinical trial;
- approximately $40.0 million to fund our ongoing efforts to develop additional clinical candidates from our IgM platform;
- approximately $25.0 million to fund the buildout and expansion of our manufacturing facilities; and
- the remaining proceeds for working capital and other general corporate purposes.

This expected use of the net proceeds from this offering represents our intentions based upon our current plans and prevailing business conditions, which could change in the future as such plans and conditions evolve. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering or the amounts that we will actually spend on the uses set forth above. We may also use a portion of the net proceeds to acquire, license or invest in complementary products, technologies, intellectual property or businesses, although we have no present commitments or agreements to do so. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering.

Based on our current business plans, we believe that the net proceeds from this offering, together with our existing cash and cash equivalents, will be sufficient to fund our planned operations into early 2022. The expected net proceeds from this offering will not be sufficient for us to fund any of our product candidates through regulatory approval, and we will need to raise substantial additional capital to complete the development and commercialization of our product candidates. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development efforts, the status of and results from preclinical studies and clinical trials, our ability to take advantage of expedited programs or to obtain regulatory approvals and the timing and costs associated with the manufacture and supply of our current or any future product candidates, any collaborations that we may enter into with third parties and any unforeseen cash needs. For additional information regarding our potential capital requirements, including factors that could cause actual costs to vary from the estimates set forth above, see the section titled “Risk Factors.”

Pending our use of the net proceeds from this offering, we plan to invest the net proceeds in a variety of interest-bearing instruments, including money market funds, U.S. Treasury securities, corporate debt, U.S. Government agency securities and commercial paper.

Table of Contents

Index to Financial Statements

DIVIDEND POLICY

We have never declared or paid cash dividends on our capital stock to investors. We currently intend to retain all available funds and any future earnings to support operations and to finance the growth and development of our business. We do not intend to declare or pay any cash dividends on our capital stock in the foreseeable future. Any future determination to pay dividends will be made at the discretion of our board of directors, subject to applicable laws, and will depend upon, among other factors, our results of operations, financial condition, contractual restrictions and capital requirements. Our future ability to pay cash dividends on our capital stock may be limited by the terms of any future debt or preferred securities.

Table of Contents

Index to Financial Statements

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of June 30, 2019:

- on an actual basis;
- on a pro forma basis to reflect (i) the issuance of 3,026,449 shares of our Series C convertible preferred stock and related gross proceeds of $40.0 million subsequent to June 30, 2019 and (ii) the automatic conversion of all outstanding shares of our convertible preferred stock, (including the shares referenced in (i)) into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock as if such conversion had occurred on June 30, 2019; and
- on a pro forma as adjusted basis to reflect (i) the pro forma items described immediately above and (ii) the issuance and sale of 10,937,500 shares of common stock in this offering at the initial public offering price of $16.00 per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this table together with the sections titled “Selected Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes included elsewhere in this prospectus.

	AS OF JUNE 30, 2019		
	ACTUAL	PRO FORMA	PRO FORMA AS ADJUSTED
	(unaudited) (in thousands, except share and per share amounts)		
Cash and cash equivalents	$ 42,672	$ 82,672	$ 241,344
Convertible preferred stock, par value $0.01 per share; 17,219,074 shares authorized and 14,192,617 shares issued and outstanding, actual; 0 shares authorized, issued and outstanding, pro forma and pro forma as adjusted	$122,785	$ —	$ —
Stockholders’ (deficit) equity:			
Preferred stock, par value $0.01 per share; 0 shares authorized, issued and outstanding, actual; 200,000,000 shares authorized, 0 shares issued and outstanding, pro forma and pro forma as adjusted	—	—	—
Common stock, par value $0.01 per share; 33,669,269 shares authorized, 618,861 shares issued and outstanding, actual; 33,669,269 shares authorized, 11,406,722 shares issued and outstanding, pro forma; 1,000,000,000 shares authorized, 22,344,222 shares issued and outstanding, pro forma as adjusted	6	114	223
Non-voting common stock, par value $0.01 per share; 4,161,370 shares authorized, 0 shares issued and outstanding, actual; 6,431,208 shares authorized, 6,431,205 shares issued and outstanding, pro forma and pro forma as adjusted	—	64	64
Additional paid-in capital	1,243	163,770	322,211
Due from related party	—	—	—
Accumulated deficit	(82,218)	(82,218)	(82,218)
Total stockholders’ (deficit) equity	(80,969)	81,730	240,280
Total capitalization	$ 41,816	$ 81,730	$ 240,280

Table of Contents

Index to Financial Statements

For purposes of this section, the number of shares of common stock and non-voting common stock that will be outstanding following this offering is based on 11,406,722 shares of common stock outstanding and 6,431,205 shares of non-voting common stock outstanding as of June 30, 2019 (including convertible preferred stock on an as-converted basis, as well as 3,026,449 shares of our Series C convertible preferred stock issued after June 30, 2019), and excludes:

- 595,832 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2010 Plan as of June 30, 2019, with a weighted-average exercise price of $0.94 per share;
- 1,333,451 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2018 Plan as of June 30, 2019, with a weighted-average exercise price of $1.39 per share;
- 116,518 shares of restricted common stock granted during 2018, none of which were vested as of June 30, 2019;
- 185,063 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2018 Plan after June 30, 2019, with a weighted-average exercise price of $10.24 per share;
- 2,703,702 shares of common stock reserved for future issuance under our 2018 Plan (which does not include an aggregate of 157,703 shares of common stock issuable upon the exercise of stock options that were granted on the effective date of the registration statement of which this prospectus forms a part, at an exercise price equal to the initial public offering price of our common stock), including the amendment thereto that became effective in connection with this offering, and any additional shares that become available under our 2018 Plan pursuant to provisions thereof that automatically increase the share reserve under the plan each year; and
- 280,000 shares of common stock reserved for future issuance under our ESPP, which became effective in connection with this offering, and any additional shares that become available under our ESPP pursuant to provisions thereof that automatically increase the share reserve under the plan each year.

Table of Contents

Index to Financial Statements

DILUTION

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

Our historical net tangible book value (deficit) as of June 30, 2019, was $(83.1) million, or $(134.21) per share of common stock, based on 618,861 shares of common stock and no shares of non-voting common stock outstanding as of June 30, 2019. Our net tangible book value (deficit) per share represents total tangible assets, excluding deferred offering costs, less total liabilities and our convertible preferred stock, all divided by the number of shares of common stock and non-voting common stock outstanding on June 30, 2019.

Our pro forma net tangible book value as of June 30, 2019 was $79.7 million, or $4.47 per share of common stock. Pro forma net tangible book value per share represents our net tangible book value per share on a pro forma basis, to reflect (i) the issuance of 3,026,449 shares of our Series C convertible preferred stock and related gross proceeds of $40.0 million subsequent to June 30, 2019 and (ii) the automatic conversion of all outstanding shares of our convertible preferred stock, (including the shares referenced in (i)) into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock as if such conversion had occurred on June 30, 2019.

After giving effect to the sale by us of 10,937,500 shares of common stock in this offering at the initial public offering price of $16.00 per share, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of June 30, 2019 would have been $240.3 million, or $8.35 per share. This amount represents an immediate increase in pro forma as adjusted net tangible book value of $3.88 per share to our existing stockholders and an immediate dilution in pro forma as adjusted net tangible book value of $7.65 per share to new investors participating in this offering. We determine dilution per share to investors participating in this offering by subtracting the pro forma as adjusted net tangible book value per share after this offering from the initial public offering price per share paid by investors participating in this offering. The following table illustrates this dilution on a per share basis.

Initial public offering price per share		$16.00
Historical net tangible book value (deficit) per share as of June 30, 2019	$(134.21)	
Pro forma change in net tangible book value (deficit) per share	138.68	
Pro forma net tangible book value per share as of June 30, 2019	4.47	
Increase in pro forma net tangible book value per share attributable to new investors purchasing shares of our common stock in this offering	3.88	
Pro forma as adjusted net tangible book value per share following this offering		8.35
Dilution in net tangible book value per share to new investors in this offering		$ 7.65

If the underwriters exercise their option to purchase additional shares of common stock in full, our pro forma net tangible book value per share, as adjusted to give effect to this offering, would be $8.70 per share, and the dilution in pro forma net tangible book value per share to investors in this offering would be $7.30 per share.

The following table summarizes, as of June 30, 2019, on a pro forma as adjusted basis as described above, the number of shares of our common stock and non-voting common stock (including 3,026,449 shares issuable upon conversion of our Series C convertible preferred stock issued after June 30, 2019), the total consideration and the average price per share (i) paid to us by existing stockholders and (ii) to be paid by new investors purchasing

Table of Contents

Index to Financial Statements

common stock in this offering at the initial public offering price of $16.00 per share, before deducting underwriting discounts and commissions and estimated offering expenses payable by us:

	SHARES PURCHASED		TOTAL CONSIDERATION		WEIGHTED-AVERAGE PRICE PER SHARE
	NUMBER	PERCENT	AMOUNT	PERCENT	
Existing stockholders before this offering	17,837,927	62.0%	$165,104,728	48.5%	$ 9.26
New investors participating in this offering	10,937,500	38.0	175,000,000	51.5	$ 16.00
Total	28,775,427	100.0%	$340,104,728	100.0%	

If the underwriters exercise their option to purchase additional shares of common stock in full, existing stockholders after this offering would own 58.6% of the total number of shares of common stock outstanding following this offering, and new investors would own 41.4% of the total number of shares of common stock outstanding after this offering.

For purposes of this section, the number of shares of common stock and non-voting common stock that will be outstanding following this offering is based on 11,406,722 shares of common stock outstanding and 6,431,205 shares of non-voting common stock outstanding as of June 30, 2019 (including convertible preferred stock on an as-converted basis, as well as 3,026,449 shares of our Series C convertible preferred stock issued after June 30, 2019), and excludes:

- 595,832 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2010 Plan as of June 30, 2019, with a weighted-average exercise price of $0.94 per share;
- 1,333,451 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2018 Plan as of June 30, 2019, with a weighted-average exercise price of $1.39 per share;
- 116,518 shares of restricted common stock granted during 2018, none of which were vested as of June 30, 2019;
- 185,063 shares of common stock issuable upon the exercise of outstanding stock options granted under our 2018 Plan after June 30, 2019, with a weighted-average exercise price of $10.24 per share;
- 2,703,702 shares of common stock reserved for future issuance under our 2018 Plan (which does not include an aggregate of 157,703 shares of common stock issuable upon the exercise of stock options that were granted on the effective date of the registration statement of which this prospectus forms a part, at an exercise price equal to the initial public offering price of our common stock), including the amendment thereto that became effective in connection with this offering, and any additional shares that become available under our 2018 Plan pursuant to provisions thereof that automatically increase the share reserve under the plan each year; and
- 280,000 shares of common stock reserved for future issuance under our ESPP, which became effective in connection with this offering, and any additional shares that become available under our ESPP pursuant to provisions thereof that automatically increase the share reserve under the plan each year.

Certain of our directors and existing stockholders, including certain stockholders affiliated with our directors and that beneficially own more that 5% of our outstanding capital stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price. The foregoing discussion does not reflect the purchase of any shares in this offering by these directors and stockholders.

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

Table of Contents

Index to Financial Statements

SELECTED FINANCIAL DATA

The following tables set forth our selected financial data as of and for the periods ended on the dates indicated. We have derived the selected statements of operations data for the years ended December 31, 2017 and 2018 and the selected balance sheet data as of December 31, 2017 and 2018 from our audited financial statements included elsewhere in this prospectus. The selected statements of operations data for the six months ended June 30, 2018 and 2019, and the balance sheet data as of June 30, 2019, have been derived from our unaudited interim condensed financial statements included elsewhere in this prospectus. The unaudited interim condensed financial statements were prepared on the same basis as our audited financial statements and reflect, in the opinion of management, all adjustments, which include only normal, recurring adjustments that are necessary to present fairly the unaudited interim condensed financial statements. Our historical results are not necessarily indicative of the results that may be expected in any future period. You should read this data together with the information in the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes included elsewhere in this prospectus. The selected financial data in this section are not intended to replace the financial statements and are qualified in their entirety by the financial statements and related notes appearing at the end of this prospectus.

	YEAR ENDED DECEMBER 31,		SIX MONTHS ENDED JUNE 30,	
	2017	2018	2018	2019
	(in thousands, except share and per share amounts)		(Unaudited)	
Statements of Operations Data:				
Operating expenses:				
Research and development	$ 8,639	$ 18,962	$ 5,976	$ 14,215
General and administrative	2,508	3,829	1,224	3,673
Total operating expenses	11,147	22,791	7,200	17,888
Loss from operations	(11,147)	(22,791)	(7,200)	(17,888)
Other income (expense), net	93	80	59	(258)
Net loss	$ (11,054)	$ (22,711)	$ (7,141)	$ (18,146)
Net loss per share, basic and diluted (1)	$ (25.24)	$ (51.84)	$ (16.30)	$ (36.17)
Weighted-average common shares outstanding, basic and diluted (1)	437,942	438,074	438,074	501,716
Pro forma net loss per share, basic and diluted (unaudited) (1)		$ (3.07)		$ (1.80)
Pro forma weighted-average common and non-voting common shares outstanding, basic and diluted (unaudited) (1)		7,395,000		10,081,088

(1) See Note 10 to our financial statements and Note 9 to our unaudited condensed financial statements included elsewhere in this prospectus for an explanation of the method used to calculate historical and pro forma net loss per share, basic and diluted, and the weighted-average number of shares used in the computation of the per share amounts.

Table of Contents

Index to Financial Statements

	AS OF DECEMBER 31,		AS OF JUNE 30,
	2017	2018	2019
		(in thousands)	
Balance Sheet Data:			
Cash and cash equivalents(1)	$ 432	$ 1,887	$ 42,672
Total assets	1,390	3,979	48,517
Accrued liabilities	507	3,582	4,048
Total liabilities	1,110	8,890	6,701
Convertible preferred stock	40,783	60,917	122,785
Accumulated deficit	(41,361)	(64,072)	(82,218)
Total stockholders' (deficit) equity	(40,503)	(65,828)	(80,969)

(1) The cash and cash equivalents balance as of June 30, 2019 does not include the $40.0 million received by us in July 2019 for the sale of 3,026,449 shares of our Series C convertible preferred stock.

Table of Contents

Index to Financial Statements

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 financial statements and related notes included elsewhere in this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business, include forward-looking statements that involve risks and uncertainties. You should review the section titled "Risk Factors" for a discussion of important factors that could cause our actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a biotechnology company pioneering the development of engineered IgM antibodies for the treatment of cancer patients. IgM antibodies have inherent properties that we believe may enable them to bind more strongly to cancer cells than comparable IgG antibodies. We have created a proprietary IgM antibody technology platform that we believe is particularly well suited for developing T cell engagers, receptor cross-linking agonists and targeted cytokines. Our lead product candidate, IGM-2323, is a bispecific T cell engaging IgM antibody targeting CD20 and CD3 proteins, and we intend to dose the first patient in a Phase 1 clinical trial for the treatment of relapsed/refractory B cell Non-Hodgkin's lymphoma (NHL) patients in 2019. Our second product candidate will be an IgM antibody targeting Death Receptor 5 (DR5) proteins, and we plan to file an investigational new drug application (IND) for the treatment of patients with solid and hematologic malignancies in 2020. We believe that we have the most advanced research and development program focused on engineered therapeutic IgM antibodies. We have created a portfolio of patents and patent applications, know-how and trade secrets directed to our platform technology, product candidates and manufacturing capabilities, and we retain worldwide commercial rights to all of our product candidates and the intellectual property related thereto.

Since the commencement of our operations, we have focused substantially all of our resources on conducting research and development activities, including drug discovery and preclinical studies, establishing and maintaining our intellectual property portfolio, the manufacturing of clinical and research material, developing our in-house manufacturing capabilities, hiring personnel, raising capital and providing general and administrative support for these operations. Since 2010, such activities have exclusively related to the research, development and manufacture of IgM antibodies and to building our proprietary IgM antibody technology platform. We do not have any products approved for sale, and we have not generated any revenue from product sales.

We have incurred significant net losses to date. Our ability to generate product revenue sufficient to achieve profitability will depend on the successful development and eventual commercialization of one or more of our current or future product candidates. Our net losses were $11.1 million and $22.7 million in 2017 and 2018, respectively, and $7.1 million and $18.1 million for the six months ended June 30, 2018 and June 30, 2019, respectively. As of June 30, 2019, we had an accumulated deficit of $82.2 million. These losses have resulted primarily from costs incurred in connection with research and development activities and general and administrative costs associated with our operations. We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future, and our net losses may fluctuate significantly from period to period, depending on the timing of and expenditures on our planned research and development activities.

We expect our expenses and capital requirements will increase substantially in connection with our ongoing activities as we:

- advance the development of IGM-2323;
- advance the development of our DR5 IgM antibody;
- expand our pipeline of IgM antibody product candidates;
- continue to invest in our IgM antibody technology platform;
- build out and expand our in-house manufacturing capabilities;
- maintain, protect and expand our intellectual property portfolio, including patents, trade secrets and know-how;

Table of Contents

Index to Financial Statements

- seek marketing approvals for any product candidates that successfully complete clinical trials;
- establish a sales, marketing, and distribution infrastructure to commercialize any product candidate for which we may obtain marketing approval and related commercial manufacturing build-out;
- implement operational, financial and management information systems; and
- attract, hire and retain additional clinical, scientific, management and administrative personnel.

Furthermore, following the completion of this offering, we expect to incur additional costs associated with operating as a public company, including significant legal, accounting, insurance, investor relations and other administrative and professional services expenses that we did not incur as a private company.

As a result, we will require substantial additional capital to develop our product candidates and fund operations for the foreseeable future. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. The amount and timing of our future funding requirements will depend on many factors, including the pace and results of our development efforts. We cannot assure you that we will ever be profitable or generate positive cash flow from operating activities.

From 2010 through December 31, 2018, we raised aggregate gross proceeds of approximately $65.0 million from the sale of $60.0 million of shares of our convertible preferred stock and $5.0 million from the issuance of an unsecured promissory note. As of December 31, 2018, we had cash and cash equivalents of $1.9 million and $5.0 million in debt outstanding under our promissory note. From January through June 2019, we raised an additional $15.0 million under our promissory note. In June 2019, we entered into an agreement to issue and sell $102.0 million of shares of our Series C convertible preferred stock, which includes $20.0 million in settlement of all of the principal amounts outstanding under our promissory note. As of June 30, 2019, $62.0 million of gross proceeds were received, which includes $20.0 million in settlement of all of the principal amounts outstanding under a promissory note held by Haldor Topsøe Holding A/S (HTH). In July 2019, we received the remaining gross proceeds of $40.0 million.

We were incorporated in Delaware in 1993 under the name Palingen, Inc. From 1993 to 2010, we were principally engaged in research related to naturally occurring IgM antibodies. In 2010, we received an initial equity investment from HTH, our current majority stockholder, changed our name to IGM Biosciences, Inc. and refocused our research and development efforts toward developing our IgM platform and engineering new IgM antibodies. In December 2017, we established a Danish holding company—IGM Biosciences A/S (Holdco); in April 2019, we dissolved Holdco. The capitalization information included in this prospectus is consistently presented as that of IGM Biosciences, Inc. even during the interim period when we had a holding company structure and our investors held their equity interests in Holdco.

Components of Results of Operations

Revenue

To date, we have not generated any revenue and do not expect to generate any revenue from the sale of products in the near future.

Operating expenses

Research and development

Research and development expenses consist primarily of costs incurred for the discovery and development of product candidates, which include:

- Direct expenses consisting of:
  - Fees paid to third parties such as consultants, contractors and contract research organizations (CROs), for animal studies and other costs related to preclinical and planned clinical studies;
  - Costs related to acquiring and manufacturing research and clinical trial materials, including under agreements with third parties such as contract manufacturing organizations (CMOs), and other vendors;
  - Costs related to the preparation of regulatory submissions; and
  - Expenses related to laboratory supplies and services;

- Indirect expenses consisting of:
  - Personnel-related expenses, including salaries, benefits and stock-based compensation expense, for personnel in our research and development functions; and
  - Depreciation of equipment and facilities expenses.

We expense research and development costs in the periods in which they are incurred. Nonrefundable advance payments for goods or services to be received in future periods for use in research and development activities are deferred and capitalized. The capitalized amounts are then expensed as the related goods are delivered and as services are performed. All direct research and development expenses are tracked by stage of development. We do not track our indirect research and development costs by product candidate or program.

We expect our research and development expenses to increase substantially for the foreseeable future as we continue to invest in research and development activities to advance our product candidates and our clinical programs, expand our product candidate pipeline and continue to build out and expand our in-house manufacturing capabilities. The process of conducting the necessary preclinical and clinical research to obtain regulatory approval is costly and time-consuming. To the extent that our product candidates continue to advance into clinical trials, as well as advance into larger and later stage clinical trials, our expenses will increase substantially and may become more variable. The actual probability of success for our product candidates may be affected by a variety of factors, including the safety and efficacy of our product candidates, investment in our clinical programs, manufacturing capability and competition with other products. As a result of these variables, 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. We may never succeed in achieving regulatory approval for any of our product candidates.

General and administrative

Our general and administrative expenses consist primarily of personnel-related expenses for personnel in our executive, finance, corporate and other administrative functions, intellectual property, facilities and other allocated expenses, other expenses for outside professional services, including legal, human resources, audit and accounting services, and insurance costs. Personnel-related expenses consist of salaries, benefits and stock-based compensation. We expect our general and administrative expenses to increase for the foreseeable future as we increase our headcount to support our continued research activities and development of product candidates and as a result of operating as a public company, including compliance with the rules and regulations of the SEC and those of any national securities exchange on which our securities are traded, legal, auditing, additional insurance expenses, investor relations activities and other administrative and professional services. We also expect our intellectual property expenses to increase as we expand our intellectual property portfolio.

Other income (expense), net

Other income (expense), net includes sublease income, interest income earned on our cash, cash equivalents and restricted cash balances and interest expense incurred on unsecured promissory notes.

Results of Operations

Comparison of the Six Months Ended June 30, 2018 and 2019

	SIX MONTHS ENDED JUNE 30,		
	2018	2019	CHANGE
	(in thousands)		
Operating expenses:			
Research and development	$ 5,976	$ 14,215	$ 8,239
General and administrative	1,224	3,673	2,449
Total operating expenses	7,200	17,888	10,688
Loss from operations	(7,200)	(17,888)	(10,688)
Other income (expense), net	59	(258)	(317)
Net loss	$ (7,141)	$ (18,146)	$ (11,005)

Table of Contents

Index to Financial Statements

Research and development expenses

The following table summarizes our research and development expenses incurred during the periods indicated:

	SIX MONTHS ENDED JUNE 30,		
	2018	2019	CHANGE
	(in thousands)		
Direct expenses			
Clinical stage program (1)	$ 1,134	$ 5,330	$ 4,196
Preclinical stage programs	2,085	3,721	1,636
Indirect expenses			
Personnel-related	2,096	3,932	1,836
Depreciation and facilities	661	1,232	571
Total research and development expenses	$ 5,976	$ 14,215	$ 8,239

(1) Includes direct expenses related to our lead product candidate, IGM-2323, for which we intend to dose the first patient in a Phase 1 clinical trial in 2019.

Research and development expenses were $6.0 million for the six months ended June 30, 2018, compared to $14.2 million for the six months ended June 30, 2019. The increase of $8.2 million was driven by an increase in expenses to advance our product candidates, including $4.2 million of expenses related to our clinical stage program, which consisted of preclinical and manufacturing expenses incurred in the development of our lead product candidate, IGM-2323, and start-up expenses for its Phase 1 clinical trial for which we intend to dose the first patient in 2019, and $1.6 million related to our preclinical stage programs. Personnel-related expenses, including stock-based compensation, increased by $1.8 million due to an increase in headcount.

General and administrative expenses

General and administrative expenses were $1.2 million for the six months ended June 30, 2018 compared to $3.7 million for the six months ended June 30, 2019. The increase of $2.4 million was primarily due to a $1.2 million increase in accounting and consulting services related to our financial statement audit, a $0.4 million increase in personnel-related expenses, a $0.3 million increase in recruitment expenses and a $0.2 million increase in legal and advisory fees.

Other income (expense), net

Other income, net was $0.1 million for the six months ended June 30, 2018 compared to other expense, net of $0.3 million for the six months ended June 30, 2019. The decrease of $0.3 million was primarily due to an increase in interest expense resulting from an interest-bearing unsecured promissory note.

Comparison of the Years Ended December 31, 2017 and 2018

	YEAR ENDED DECEMBER 31,		
	2017	2018	CHANGE
	(in thousands)		
Operating expenses:			
Research and development	$ 8,639	$ 18,962	$ 10,323
General and administrative	2,508	3,829	1,321
Total operating expenses	11,147	22,791	11,644
Loss from operations	(11,147)	(22,791)	(11,644)
Other income, net	93	80	(13)
Net loss	$ (11,054)	$ (22,711)	$ (11,657)

Table of Contents

Index to Financial Statements

Research and development expenses

The following table summarizes our research and development expenses incurred during the periods indicated:

	YEAR ENDED DECEMBER 31,		
	2017	2018	CHANGE
	(in thousands)		
Direct expenses			
Clinical stage program (1)	$ 1,168	$ 7,359	$ 6,191
Preclinical stage programs	3,229	5,394	2,165
Indirect expenses			
Personnel-related	2,889	4,743	1,854
Depreciation and facilities	1,353	1,466	113
Total research and development expenses	$ 8,639	$ 18,962	$ 10,323

(1) Includes direct expenses related to our lead product candidate, IGM-2323, for which we intend to dose the first patient in Phase 1 clinical trial in 2019.

Research and development expenses were $8.6 million in 2017 compared to $19.0 million in 2018. The increase of $10.3 million was driven by an increase in expenses to advance our product candidates, including $6.2 million of expenses related to our clinical stage program, which consisted of preclinical and clinical expenses and expenses incurred in the development of our lead product candidate, IGM-2323 and the preparation for its Phase 1 clinical trial, and $2.2 million related to our preclinical stage programs. Personnel-related expenses, including stock-based compensation, increased by $1.9 million due to an increase in headcount.

General and administrative expenses

General and administrative expenses were $2.5 million in 2017 compared to $3.8 million in 2018. The increase of $1.3 million was primarily due to a $0.7 million increase in legal and advisory fees, a $0.3 million increase in recruitment expenses and a $0.2 million increase in personnel-related expenses.

Other income, net

Other income, net was $93,000 in 2017 compared to $80,000 in 2018. The decrease of $13,000 was primarily due to an increase in interest expense resulting from an interest-bearing unsecured promissory note.

Liquidity and Capital Resources

Liquidity

Due to our significant research and development expenditures, we have generated operating losses since our inception. We have funded our operations primarily through the sale of convertible preferred stock and the issuance of unsecured promissory notes. As of June 30, 2019, we had cash and cash equivalents of $42.7 million. Additionally, in July 2019, we received cash of $40.0 million in connection with the issuance of our Series C convertible preferred stock. As of June 30, 2019, we had an accumulated deficit of $82.2 million.

Future Funding Requirements

Our primary uses of cash are to fund operating expenses, which consist primarily of research and development expenditures related to our programs and related personnel costs. The timing and amount of our future funding requirements depends on many factors, including the following:

- the initiation, scope, rate of progress, results and cost of our preclinical studies, clinical trials and other related activities for our product candidates;
- the costs associated with manufacturing our product candidates, including building out and expanding our own manufacturing facilities, and establishing commercial supplies and sales, marketing and distribution capabilities;
- the timing and cost of capital expenditures to support our research, development and manufacturing efforts;
- the number and characteristics of other product candidates that we pursue;
- the costs, timing and outcome of seeking and obtaining FDA and non-U.S. regulatory approvals;

Table of Contents

Index to Financial Statements

- our ability to maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make in connection with the licensing, filing, defense and enforcement of any patents or other intellectual property rights;
- the timing, receipt and amount of sales from our potential products;
- our need and ability to hire additional management, scientific and medical personnel;
- the effect of competing products that may limit market penetration of our product candidates;
- our need to implement additional internal systems and infrastructure, including financial and reporting systems;
- the economic and other terms, timing and success of any collaboration, licensing, or other arrangements into which we may enter in the future, including the timing of receipt of any milestone or royalty payments under these agreements;
- the compliance and administrative costs associated with being a public company; and
- the extent to which we acquire or invest in businesses, products or technologies, although we currently have no commitments or agreements relating to any of these types of transactions.

Based on our current operating plan, our current cash and cash equivalents, together with the proceeds from the sale and issuance of our Series C preferred stock, are expected to be sufficient to fund our ongoing operations for at least the following 12 months, without giving effect to any anticipated proceeds from this offering. However, we have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect.

In addition, we will require additional funding in order to complete development of our product candidates and commercialize our products, if approved. We may seek to raise any necessary additional capital through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. There can be no assurance that, in the event we require additional financing, such financing will be available at terms acceptable to us, if at all. Failure to generate sufficient cash flows from operations, raise additional capital, and reduce discretionary spending should additional capital not become available could have a material adverse effect on our ability to achieve our intended business objectives. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated preclinical studies and clinical trials. To the extent that we raise additional capital through collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our product candidates, future revenue streams or research programs at an earlier stage of development or on less favorable terms than we would otherwise choose or to grant licenses on terms that may not be favorable to us. If we do raise additional capital through public or private equity or convertible debt offerings, the ownership interest of our existing stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect our stockholders' rights. If we raise additional capital through debt financing, we may be subject to covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we are unable to obtain additional funding from these or other sources, it may be necessary to significantly reduce our rate of spending through reductions in staff and delaying, scaling back, or stopping certain research and development programs.

Table of Contents

Index to Financial Statements

Cash Flows

The following summarizes our cash flows for the periods indicated:

	YEAR ENDED DECEMBER 31,		SIX MONTHS ENDED JUNE 30,	
	2017	2018	2018	2019
	(in thousands)		(in thousands)	
Cash used in operating activities	$ (10,357)	$ (20,044)	$ (7,962)	$ (17,669)
Cash used in investing activities	(385)	(788)	(321)	(1,148)
Cash provided by financing activities	8,068	22,337	8,876	59,602
Net increase (decrease) in cash and cash equivalents and restricted cash	$ (2,674)	$ 1,505	$ 593	$ 40,785

Cash used in operating activities

For the six months ended June 30, 2019, cash used in operating activities was $17.7 million, which consisted of a net loss of $18.1 million and a net change of $0.3 million in our net operating assets and liabilities, partially offset by $0.8 million in non-cash charges. The net change in our operating assets and liabilities was primarily due to a decrease of accrued liabilities of $1.1 million and an increase of prepaid expenses of $0.8 million, partially offset by an increase in accounts payable of $1.4 million. The non-cash charges primarily consisted of stock-based compensation of $0.3 million and accrued interest on related party loan of $0.3 million.

For the six months ended June 30, 2018, cash used in operating activities was $8.0 million, which consisted of a net loss of $7.1 million and a net change of $1.0 million in our net operating assets and liabilities, partially offset by $0.2 million in non-cash charges. The net change in our operating assets and liabilities was primarily due to an increase in prepaid expenses of $0.6 million and a decrease in accounts payable of $0.2 million, and a decrease in income tax payable of $0.1 million. The non-cash charges primarily consisted of depreciation of $0.1 million.

In 2018, cash used in operating activities was $20.0 million, which consisted of a net loss of $22.7 million, partially offset by a net change of $2.2 million in our net operating assets and liabilities and $0.5 million in non-cash charges. The net change in our operating assets and liabilities was primarily due to an increase in accrued liabilities of $2.8 million resulting from an increase in research and development activities. This was partially offset by an increase in prepaid expenses of $0.3 million primarily associated with prepayments made for ongoing research and development activities conducted by third-party service providers. The non-cash charges primarily consisted of depreciation of $0.3 million and stock-based compensation of $0.2 million.

In 2017, cash used in operating activities was $10.4 million, which consisted of a net loss of $11.1 million, partially offset by a net change of $0.4 million in our net operating assets and liabilities and $0.3 million in non-cash charges. The net change in our operating assets and liabilities was primarily due to an increase in accrued liabilities of $0.3 million resulting from an increase in research and development activities. The non-cash charges primarily consisted of depreciation of $0.2 million and stock-based compensation of $0.1 million.

Cash used in investing activities

Cash used in investing activities was $1.1 million and $0.3 million for the six months ended June 30, 2019 and 2018, respectively, related to the purchases of lab equipment for research and development activities.

Cash used in investing activities was $0.8 million and $0.4 million in 2018 and 2017, respectively, related to the purchase of property and equipment.

Cash provided by financing activities

For the six months ended June 30, 2019, cash provided by financing activities was $59.6 million, which consisted primarily of $42.0 million of proceeds from the issuance of shares of our Series C convertible preferred stock $15.0 million of proceeds from the issuance of an unsecured promissory note to a related party which was subsequently settled as Series C convertible preferred stock in June 2019, and the receipt of a $2.5 million receivable that was due from a related party.

Table of Contents

Index to Financial Statements

For the six months ended June 30, 2018, cash provided by financing activities was $8.9 million, which consisted of a loan from a related party of $5.0 million and proceeds from related party capital contribution of $3.9 million.

In 2018, cash provided by financing activities was $22.3 million, which consisted primarily of $17.3 million in proceeds from the issuance of shares of our Series B convertible preferred stock and $5.0 million from the issuance of an unsecured promissory note.

In 2017, cash provided by financing activities was $8.1 million, which consisted of proceeds from the issuance of shares of our Series B convertible preferred stock.

Contractual Obligations and Other Commitments

The following table summarizes our contractual obligations and other commitments as of June 30, 2019:

	PAYMENTS DUE BY PERIOD				
	LESS THAN 1 YEAR	1 TO 3 YEARS	3 TO 5 YEARS	MORE THAN 5 YEARS	TOTAL
	(in thousands)				
Contractual obligations:					
Operating lease obligations (1)	$ 1,785	$3,871	$4,107	$ 1,780	$11,543

(1) Payments due for our lease of office, laboratory and manufacturing space in Mountain View, California. The payments represent gross operating lease obligations and exclude sublease income.

In addition, we enter into agreements in the normal course of business with CROs, CMOs and other vendors for research and development services for operating purposes, which are generally cancelable upon written notice. These payments are not included in this table of contractual obligations.

We have not included milestone or royalty payments or other contractual payment obligations in the table above as the timing and amount of such obligations are unknown or uncertain. See Note 4 to our financial statements and our unaudited condensed financial statements included elsewhere in this prospectus.

Off-Balance Sheet Arrangements

We have not entered into any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

Critical Accounting Polices and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenue generated, and reported expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in the Note 2 to our financial statements and our unaudited condensed financial statements included elsewhere in this prospectus, we believe that the following critical accounting policies are most important to understanding and evaluating our reported financial results.

Accrued Research and Development Expenses

We record accruals for estimated costs of research, preclinical, clinical and manufacturing development, which are significant components of research and development expenses. A substantial portion of our ongoing research and development activities is conducted by third-party service providers, CROs and CMOs. Our contracts with the CROs and CMOs generally include fees such as initiation fees, reservation fees, costs related to animal studies and safety

tests, verification run costs, materials and reagents expenses, taxes, etc. The financial terms of these contracts are subject to negotiations, which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to us under such contracts. We accrue the costs incurred under agreements with these third parties based on estimates of actual work completed in accordance with the respective agreements. We determine the estimated costs through discussions with internal personnel and external service providers as to the progress, or stage of completion or actual timeline (start-date and end-date) of the services and the agreed-upon fees to be paid for such services. For the periods presented, there have been no material differences from our estimated accrued research and development expenses to actual expenses.

Stock-based Compensation

We account for stock-based compensation by measuring and recognizing compensation expense for all share-based awards made to employees and directors based on estimated grant-date fair values. We use the straight-line method to allocate compensation cost to reporting periods over the requisite service period, which is generally the vesting period, and estimates the fair value of share-based awards to employees and directors using the Black-Scholes option-pricing valuation model. The Black-Scholes model requires the input of subjective assumptions, including fair value of common stock, expected term, expected volatility, risk-free interest rate and expected dividends, which are described in greater detail below. We account for forfeitures as they occur. Stock-based compensation awarded to non-employees for the years ended December 31, 2017 and 2018, and the six months ended June 30, 2019, was not material. Disclosures related to stock-based compensation have been included for employee stock-based compensation only. As a result of the adoption of ASU No. 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, effective January 1, 2019, there is no change in the measurement and recognition of the compensation expense between employee and non-employee during the six months ended June 30, 2019.

Fair Value of Common Stock—Historically, as there has been no public market for our common stock, the fair value of our common stock was determined by our board of directors based in part on valuations of our common stock prepared by a third-party valuation firm. See the subsection titled “Fair Value of Common Stock” below.

Expected Term—The expected term of the options represents the average period the stock options are expected to remain outstanding. As we do not have sufficient historical information to develop reasonable expectations about future exercise patterns and post-vesting employment termination behavior, the expected term of options granted is derived from the average midpoint between the weighted average vesting and the contractual term, also known as the simplified method.

Expected Volatility—Since we are not yet a public company and do not have any trading history for our common stock, the expected volatility is based on the historical volatilities of the common stock of comparable publicly traded companies. We selected companies with comparable characteristics, including enterprise value, risk profiles, position within the industry, and, where applicable, with historical share price information sufficient to meet the expected life of our stock-based awards. We will continue to apply this process until enough historical information regarding the volatility of our own stock price becomes available.

Risk-Free Interest Rate—The risk-free interest rate is based on the yield of zero-coupon U.S. Treasury notes as of the grant date with maturities commensurate with the expected term of the awards.

Expected Dividends—The expected dividends assumption is based on our expectation of not paying dividends in the foreseeable future; therefore, we used an expected dividend yield of zero.

Assumptions we used in applying the Black-Scholes option-pricing model to determine the estimated fair value of our stock options granted 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.

Fair Value of Common Stock

Historically, for all periods prior to this initial public offering, the fair values of the shares of common stock underlying our share-based awards were estimated on each grant date by our board of directors or a committee thereof. Given the absence of a public trading market for our common stock, our board of directors and committee exercised reasonable judgment and considered a number of objective and subjective factors to determine the best

estimate of the fair value of our common stock, including our stage of development; our actual operating results and financial performance; progress of our research and development efforts; conditions in the industry and economy in general; the rights, preferences and privileges of our convertible preferred stock relative to those of our common stock; the likelihood of achieving a liquidity event for the holders of our common stock, such as an initial public offering or a sale of our company, given prevailing market conditions; equity market conditions affecting comparable public companies; the lack of marketability of our common stock and the results of independent third-party valuations prepared in accordance with the guidance provided by the American Institute of Certified Public Accountants 2013 Practice Aid, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation* (Guide). The Guide 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.

For valuations prior to December 31, 2018, we used the option-pricing method (OPM). Under the 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. Specifically, we use the OPM backsolve method to estimate the fair value of our common stock, which derives the implied equity value for one type of equity security from a contemporaneous transaction involving another type of security, shares of our Series B convertible preferred stock in this instance. We used the OPM backsolve method because we were at an early stage of development and future liquidity events were difficult to forecast. We applied a discount for lack of marketability to account for a lack of access to an active public market.

For our valuation as of June 30, 2019, we used a combination of the OPM and the probability weighted expected return method (PWERM) and considered two types of future event scenarios: an initial public offering and remaining private. 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. This method is generally considered appropriate to use when there are several distinct scenarios to be considered. We determined the relative probability of each type of future event scenario based on an analysis of market conditions at the time, including then-current initial public offering valuations of similarly situated companies, and expectations as to the timing and likely prospects of the future-event scenarios.

To derive the fair value of the common stock for each scenario using the hybrid PWERM and OPM, we calculated the proceeds to the common stockholders based on the preferences and priorities of the preferred and common stock. We then applied a discount for lack of marketability to the common stock to account for the lack of access to an active public market.

Application of these approaches involves the use of estimates, judgment, and assumptions that are highly complex and subjective, such as those regarding our expected future revenue, expenses, and cash flows, discount rates, market multiples, the selection of comparable companies, and the probability of future events. Changes in any or all of these estimates and assumptions, or the relationships between those assumptions, impact our valuations as of each valuation date and may have a material impact on the valuation of common stock.

The assumptions underlying these valuations represent our management's best estimate, which involve inherent uncertainties and the application of management judgment. As a result, if factors or expected outcomes change and we use significantly different assumptions or estimates, our stock-based compensation expense could be materially different. Following the completion of the offering, the fair value of our common stock will be determined based on the quoted market price of our common stock.

The intrinsic value of all outstanding options as of June 30, 2019 was $201.6 million, $127.7 million of which related to unvested options as of such date, based on the estimated fair value of our common stock of $16.00 per share, the initial public offering price.

Quantitative and Qualitative Disclosures about Market Risk

The primary objectives of our investment activities are to ensure liquidity and to preserve capital. We are exposed to market risks in the ordinary course of our business. These risks primarily include interest rate sensitivities. There was no material foreign currency risk for the six months ended June 30, 2019 or the years ended December 31, 2017

and 2018. We held cash and cash equivalents of $1.9 million and $42.7 million as of December 31, 2018 and June 30, 2019, respectively. We generally hold our cash in interest-bearing money market accounts. We held interest-bearing liabilities of $5.0 million as of December 31, 2018 in the form of an unsecured promissory note, which bore interest at a rate of 3.6% per year, and held no interest-bearing liabilities as of June 30, 2019. Historical fluctuations in interest rates have not been significant for us. Due to the short-term maturities of our cash equivalents, an immediate 10% relative change in interest rates would not have a material effect on the fair market value of our cash equivalents.

Recent Accounting Pronouncements

See Note 2 to our financial statements and our unaudited condensed financial statements included elsewhere in this prospectus for more information about recent accounting pronouncements, the timing of their adoption, and our assessment, to the extent we have made one yet, of their potential impact on our financial condition of results of operations.

Emerging Growth Company Status

We are an emerging growth company (EGC), as defined in the Jumpstart Our Business Startups Act of 2012 (JOBS Act). We will remain an EGC until the earliest of: (i) the last day of the fiscal year in which we have total annual gross revenues of $1.07 billion or more; (ii) the last day of the fiscal year following the fifth anniversary of the completion of our IPO; (iii) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC, which generally is when a company has more than $700 million in market value of its stock held by non-affiliates, has been a public company for at least 12 months and has filed one annual report on Form 10-K. Under the JOBS Act, emerging growth companies may delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. We have elected to avail ourselves of this exemption from new or revised accounting standards and, therefore, will not be subject to the same new or revised accounting standards as other public companies that are not EGCs. As a result, our financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates.

In addition, we intend to rely on the other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, if as an EGC we intend to rely on such exemptions, we are not required to, among other things: (i) provide an auditor's attestation report on our system of internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act of 2002; (ii) provide all of the compensation disclosure that may be required of non-emerging growth public companies under the Dodd-Frank Wall Street Reform and Consumer Protection Act; (iii) comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements (auditor discussion and analysis); and (iv) disclose certain executive compensation-related items such as the correlation between executive compensation and performance and comparisons of the Chief Executive Officer's compensation to median employee compensation.

Table of Contents

Index to Financial Statements

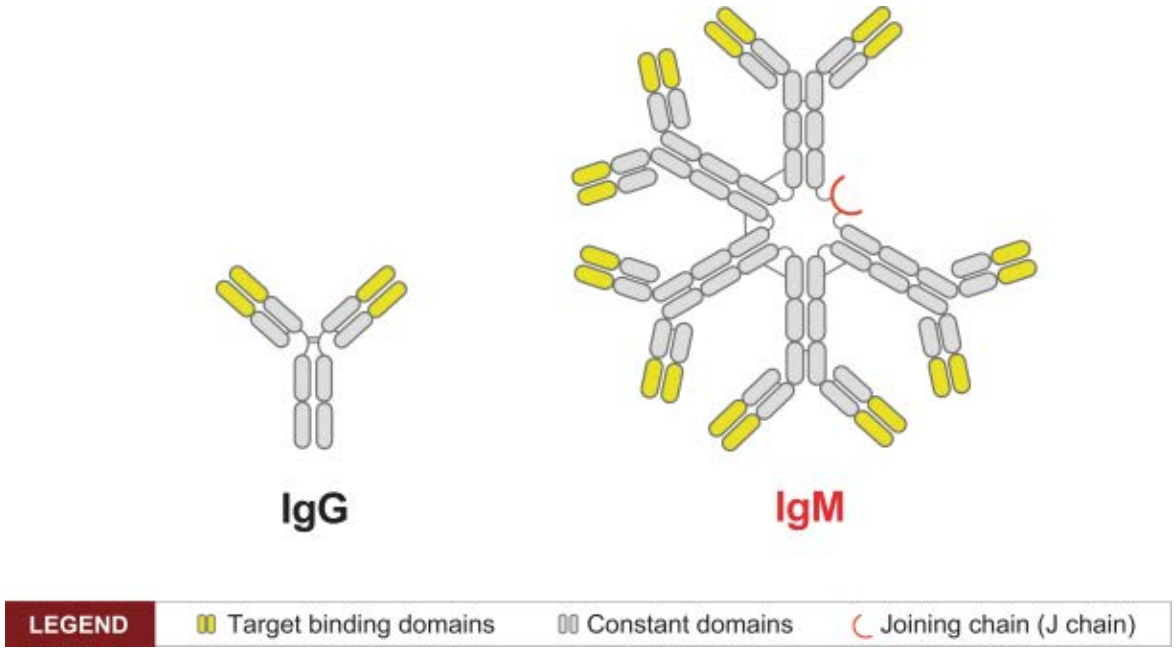
BUSINESS

Overview

We are a biotechnology company pioneering the development of engineered IgM antibodies for the treatment of cancer patients. IgM antibodies have inherent properties that we believe may enable them to bind more strongly to cancer cells than comparable IgG antibodies. We have created a proprietary IgM antibody technology platform that we believe is particularly well suited for developing T cell engagers, receptor cross-linking agonists and targeted cytokines. Our lead product candidate, IGM-2323, is a bispecific T cell engaging IgM antibody targeting CD20 and CD3 proteins, and we intend to dose the first patient in a Phase 1 clinical trial for the treatment of relapsed/refractory B cell Non-Hodgkin's lymphoma (NHL) patients in 2019. Our second product candidate will be an IgM antibody targeting Death Receptor 5 (DR5) proteins, and we plan to file an investigational new drug application (IND) for the treatment of patients with solid and hematologic malignancies in 2020. We believe that we have the most advanced research and development program focused on engineered therapeutic IgM antibodies. We have created a portfolio of patents and patent applications, know-how and trade secrets directed to our platform technology, product candidates and manufacturing capabilities, and we retain worldwide commercial rights to all of our product candidates and the intellectual property related thereto.

Immunoglobulin G (IgG) and Immunoglobulin M (IgM) are classes of antibodies that are naturally produced by the human immune system and are distinguishable by their structural properties.

Structural Comparison of IgG and IgM Antibodies



IgM antibodies have 10 binding domains compared to 2 for IgG antibodies. This inherent biological advantage enables:

- Stronger binding to cell surface targets, including those with low expression levels, which may result in better and more complete targeting of cancer cells;
- Stronger binding to difficult targets, such as tumor associated carbohydrates and glycosylated proteins, which has the potential to expand the range of addressable cancer targets;
- Greater ability to cross-link cell surface receptors, which may significantly enhance cellular signaling for killing cancer cells or stimulating T cells, which are a type of white blood cell that are an essential part of the immune system; and

Table of Contents

Index to Financial Statements

- Substantially greater ability to utilize the complement dependent cytotoxicity (CDC) mechanism of killing targeted cells, which kills cancer cells without requiring the presence of immune cells.

Despite these inherent biological advantages, while IgG antibodies have been broadly developed as therapeutics for cancer, we believe the therapeutic potential of engineered IgM antibodies has remained largely unexplored.

Our Platform

We created our IgM platform to expand upon the inherent properties of IgM antibodies and to allow for the rapid development of engineered therapeutic antibodies. Significantly, our IgM platform allows us to create IgM antibodies with higher affinity and avidity than naturally occurring IgM antibodies. We believe our platform also allows us to utilize the strong and durable binding of IgM antibodies to kill cancer cells with T cells, induce programmed death of cancer cells or deliver immune stimulating cytokines to the region of the bound cell.

The versatility of our IgM platform positions us to evaluate multiple approaches to treat patients with solid and hematologic malignancies. Our ability to develop engineered IgM antibodies against various targets allows for the creation of a broad and differentiated product pipeline. Our initial efforts are focused on three broad applications of IgM antibodies:

- **T cell engagers:** T cell to cancer cell engagement, including CD20 x CD3, CD123 x CD3, CD38 x CD3 and solid tumor target x CD3 programs, which we believe may have the potential to kill cancer cells through T cell directed cellular cytotoxicity (TDCC) and CDC while maintaining a favorable tolerability profile.
- **Receptor cross-linking agonists:** Tumor Necrosis Factor receptor Superfamily (TNFrSF) agonists, including DR5, which induces programmed death of cancer cells, as well as OX40, glucocorticoid-induced TNFr-related protein (GITR) and other TNFrSF members, which we believe may enhance the ability of the immune system to fight cancer.
- **Targeted cytokines:** Targeted cytokine delivery, including interleukin-15 (IL-15), which we believe may be helpful in inducing and maintaining immune responses to cancer.

Our Pipeline

Our lead product candidate, IGM-2323, is a CD20 x CD3 bispecific IgM antibody for the treatment of patients with CD20-positive cancer. CD20 is a protein commonly expressed on the surface of NHL cells and chronic lymphocytic leukemia (CLL) cells, while CD3 is a protein expressed on the surface of T cells. IGM-2323 contains 10 binding domains for CD20 and one binding domain for CD3. In our preclinical studies, IGM-2323 strongly bound to CD20-positive cancer cells and induced potent T cell dependent and complement dependent cancer cell death, including those cells with low levels of CD20. In addition, we observed lower cytokine release with IGM-2323 relative to comparable IgG bispecific T cell engaging antibodies in our preclinical studies, which may result in reduced risk of the serious adverse effects of cytokine release syndrome (CRS). We plan to begin evaluating IGM-2323 in a Phase 1 clinical trial in relapsed/refractory B cell NHL patients, which is B cell NHL that has either not responded to initial treatment or responded to treatment but then returns, in 2019. Treatment with combination chemo-immunotherapy, such as with rituximab-based regimens, or high dose chemotherapy and bone marrow transplant, is generally effective and may cure approximately 50-70% of patients with aggressive B cell NHL. Indolent B cell NHL, which represents approximately 40% of B cell NHL cases, remains mostly incurable at advanced stages with current therapies.

Our second product candidate will be an IgM antibody targeting DR5 for the treatment of patients with solid and hematologic malignancies. DR5 receptors are expressed on a broad range of solid tumors as well as leukemias and lymphomas, but their intracellular apoptotic signaling requires efficient cross-linking of at least three DR5 receptors. Our DR5 IgM antibodies demonstrated significantly enhanced apoptotic signaling compared to an IgG antibody with the same binding domains, resulting in >1,000 fold increased potency in killing cancer cells from multiple cancer cell types in our studies outside of living organisms (*in vitro*) studies. In our preliminary studies in living organisms (*in vivo*), specifically cynomolgus monkeys, no untoward toxicity was observed with our DR5 IgM antibodies. We expect to file an IND for a DR5 IgM antibody in 2020.

Table of Contents

Index to Financial Statements

The following table highlights our lead programs:

Mode	Target	Indication	Phase of Development					Worldwide Commercial Rights	Anticipated Milestone
			Discovery	Preclinical	Phase 1	Phase 2	Phase 3		
T cell Engager	IGM-2323 (CD20x CD3)	NHL and CLL						IGM	Initial Phase 1 data for r/r B cell NHL: 2020
Receptor Cross-linking Agonist	IgM Antibody (DR5)	Solid and Hematologic Malignancies						IGM	IND filing: 2020

The following table highlights discovery programs that we are prioritizing:

Mode	Target	Indication	Worldwide Commercial Rights
T cell Engagers	CD123 x CD3	Acute Myeloid Leukemia	IGM
	CD38 x CD3	Multiple Myeloma	
	Multiple Targets x CD3	Multiple Solid Tumors	
Receptor Cross-linking Agonists	OX40	Solid and Hematologic Malignancies	IGM
	GITR		
Targeted Cytokines	Multiple Targets x IL-15	Solid and Hematologic Malignancies	IGM

We estimate that these discovery programs are at least two years away from clinical studies, assuming they meet our requirements for advancement. We do not anticipate advancing all of these programs into clinical testing, and some of these programs may be supplanted by other IgM discovery programs.

Our Team

Our management team and board of directors have decades of biotechnology experience and perspective in areas such as cancer biology, immunotherapy, immunology, antibody discovery, protein engineering and clinical development. They bring a strong history of leadership, innovation and research and development experience at leading companies, including Roche/Genentech, Amgen, Gilead Sciences, Celgene, Millennium Pharmaceuticals, Shire, Kite Pharma, Bavarian Nordic, Sutro Biopharma and Northern Biologics. Members of our team were involved in the discovery, development or commercialization of multiple therapeutics, including Tecentriq, Yescarta, Zydelig, Avastin, Lucentis, Vectibix, Activase, TNKase and Kogenate. Our team is further supported by a strong group of investors that share our commitment to developing IgM antibodies for the treatment of cancer patients. Since 2010, we have raised approximately $162.0 million through convertible preferred stock financings. Our key investors include Haldor Topsøe Holding A/S (HTH), a global leader in catalysis and chemical process technology, and leading institutional investors, Baker Brothers, Redmile Group, Janus Henderson Investors and Vivo Capital.

Our Strategy

Our strategy is to sustain and extend our global leadership in the development of engineered IgM antibodies for therapeutic use. We plan to achieve this by utilizing our proprietary IgM technology to develop antibodies with differentiated product profiles and the ability to address difficult to treat patients with cancers and other serious diseases. This strategy encompasses the following key elements:

- ***Advance IGM-2323 through clinical development in B cell NHL to establish our IgM platform as the leading CD3 T cell engaging technology.*** IGM-2323 will be our first clinical stage product candidate developed using our IgM platform and we believe it will be the only engineered therapeutic IgM antibody in active

clinical development at that time. The FDA has accepted our IND for IGM-2323 and we intend to dose the first patient in a Phase 1 clinical trial as a monotherapy for the treatment of relapsed/refractory B cell NHL patients in 2019. We plan on initially developing IGM-2323 for both aggressive and indolent lymphomas as a single agent in relapsed/refractory patients. Further development may include other CD20 expressing hematologic malignancies, such as CLL, and combination therapy in treatment-naïve lymphoma.

- ***Progress a DR5 IgM antibody into clinical trials to establish the efficacy of our IgM antibodies in targeting members of the TNFrSF.*** We plan to file an IND for our second product candidate in 2020 and, if accepted, to advance it into clinical trials in solid and hematologic malignancies. We plan on initially developing our DR5 IgM antibody as a single agent in solid and hematologic malignancies that have failed standard treatment. Further development will include combination with other therapies, which may include a broad range of treatment-resistant solid and hematologic malignancies.
- ***Utilize our proprietary T cell engaging and immune stimulating technologies to expand our pipeline of IgM antibody product candidates.*** Our IgM platform enables us to rapidly create a broad pipeline of product candidates. We are currently prioritizing: CD3 T cell engaging antibodies; T cell stimulating antibodies, including antibodies that target T cell stimulatory members of the TNFrSF; and antibodies that are intended to deliver IL-15 to a target to enhance cancer immune responses while limiting systemic toxicity. We will prioritize product candidates based on a range of factors, including strength of preclinical data, single agent clinical benefit, efficiency of clinical development paths and market opportunities.
- ***Build antibody manufacturing capabilities to support our future clinical trials and provide commercial supply for any approved product candidates.*** Manufacturing IgM antibodies is a complex process and represents a critical component to our long-term success. We have invested significant resources developing our manufacturing processes and know-how to enable us to manufacture our IgM antibodies at scale. We believe developing our internal manufacturing capacity is important to enable further process improvements, maintain quality control, limit our reliance on contract manufacturers and protect our trade secrets and other intellectual property. We plan to build out and expand our own manufacturing facilities to produce our product candidates in sufficient quantities to conduct clinical trials and manufacture commercial supply for approved products.
- ***Directly commercialize any approved product candidates in key markets alone or with strategic partners.*** We retain exclusive worldwide commercial rights to all of our product candidates and intend to pursue clinical development programs with the goal of obtaining regulatory approval in the United States and internationally. We intend to directly commercialize our product candidates in key markets either alone or with partners and may enter into strategic collaborations or other partnerships to accelerate our development timelines and maximize the worldwide commercial potential of any approved product candidates.
- ***Continue to expand our intellectual property portfolio to further protect our IgM platform and our product candidates.*** We believe we are the global leader in the development of engineered IgM antibodies for therapeutic use, and we have created an extensive intellectual property portfolio to protect our leadership and novel approaches in this field. The intellectual property surrounding our IgM platform consists of patents and patent applications, trade secrets and know-how, and we plan to expand this portfolio as we continue to develop our IgM platform.

We believe that if we are successful in bringing an IgM antibody to market, particularly one that is more effective and safer than comparable IgG antibodies, we will significantly alter the course of future therapeutic antibody development.

Our Differentiated Approach and Proprietary Platform

We are developing IgM antibodies that have properties which we believe may enable them to bind more strongly to cancer cells than comparable IgG antibodies in many therapeutic applications. IgM antibodies have 10 binding domains compared to 2 for IgG antibodies, which results in far greater binding power to a cell surface target.

Over the past 40 years, the biotechnology industry's development of antibodies has yielded effective therapeutic drugs for the treatment of patients with a variety of diseases including cancer, autoimmune diseases and infectious diseases. According to market research, there were over 70 approved antibody related therapies generating over

$120 billion in reported worldwide sales in 2018. All of these antibodies are members of the IgG class. We are pioneering the development of new therapies based on the IgM class of antibodies. Our near and medium term efforts are focused on oncology, but we believe our IgM antibodies could have therapeutic applications across a wide range of diseases.

There are two measures of target binding strength that are generally used in connection with antibodies:

- Affinity—the binding strength of each individual binding domain of the antibody bound to the target; and
- Avidity—the combined binding strength of all of the binding domains of the antibody bound to the target.

The greater number of binding domains of an IgM antibody results in far greater avidity to a cell surface target compared with an IgG antibody with the same affinity per binding domain. The greater number of binding domains also allows IgM antibodies to bind more cell surface targets in close proximity with a single antibody. The inherent biological advantages of IgM antibodies enable:

- Stronger binding to cell surface targets, including those with low expression levels, which may result in better and more complete targeting of cancer cells;
- Stronger binding to difficult targets, such as tumor associated carbohydrates and glycosylated proteins, which has the potential to expand the range of addressable cancer targets;
- Greater ability to cross-link cell surface receptors, which may significantly enhance cellular signaling for killing cancer cells or stimulating T cells; and
- Substantially greater ability to utilize the complement dependent cytotoxicity (CDC) mechanism of killing targeted cells, which kills cancer cells without requiring the presence of immune cells.

Development of IgM antibodies has been historically limited by difficulties encountered in the recombinant expression and manufacture of these antibodies. Through our focused efforts over the last eight years, we have developed a broad range of skills, knowledge and trade secrets that have allowed us to successfully express and manufacture a wide range of IgM antibodies.

We created our IgM platform to expand upon the inherent qualities of IgM antibodies and to allow for the rapid development of engineered therapeutic antibodies. Through our efforts, we have developed a wide variety of proprietary methods and techniques designed to achieve the following goals:

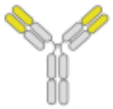
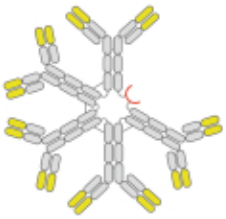
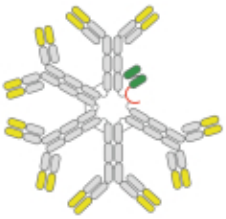
- **Expression and manufacture:** Overcome the traditional difficulties the pharmaceutical industry has experienced in recombinantly expressing and manufacturing IgM antibodies;
- **Engineered IgM antibodies:** Create IgM antibodies recombinantly, by transferring IgG binding domains to IgMs, to include the benefits of high affinity and high specificity IgG variable regions;
- **Bispecific platform:** Create bispecific antibodies with the benefits of the high avidity of 10 binding domains to one target combined with one binding domain to a second target;
- **Improved half-life:** Extend the serum half-life of recombinantly generated IgM antibodies; and
- **Complement modulation:** Modulate the CDC mechanism of IgM antibodies.

Table of Contents

Index to Financial Statements

We believe that our IgM platform creates significant competitive advantages and can serve as the foundation for the development of a broad range of IgM based therapeutic drugs. The following table compares the key properties of IgG antibodies to those of naturally occurring IgM antibodies, as well as to our engineered IgM antibodies:

Properties of IgG vs IgM Antibodies

Structure	 IgG	 Naturally Occurring IgM	 Engineered IgM
Binding domains	2	10	10
Binding valency	Bivalent	Multivalent	Multivalent
Affinity	High	Low to Medium	High
Avidity	Low	Medium	High
Binding to low expression targets	Low	Medium	High
Binding to carbohydrate antigens	Low	Medium	High
Mechanism of cell killing	ADCC + CDC	CDC	TDCC + CDC
Antibody construct	Heavy chains Light chains	Heavy chains Light chains Jchain	Heavy chains Light chains Modified Jchain
Molecular weight	150kDa	960kDa	≥960kDa

LEGEND: Target binding domains; CD3 binding domain; Constant domains; J chain

Our Antibodies

T cell Engagers

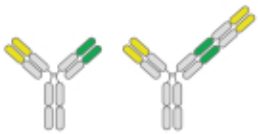
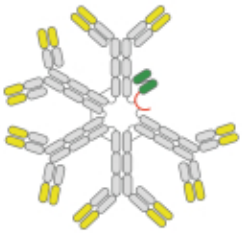
We have been able to utilize the natural features of IgM antibodies to create unique and patent protected bispecific T cell engagers, which we believe may have the potential to kill cancer cells through TDCC and CDC while maintaining a favorable tolerability profile. Bispecific T cell engagers are designed to simultaneously target a desired tumor associated antigen on a cancer cell and CD3 (a protein that is expressed on the surface of T cells) and redirect the T cells to kill the cancer cells. In contrast to other bispecific antibody formats that bind to one or two target molecules on the surface of the cancer cell and to one CD3 molecule on the surface of the T cell, our IgM bispecific format provides 10 binding domains to the cancer cell and one binding domain to CD3. We believe that our IgM bispecific antibodies may successfully bind to cancer cells for longer periods and with more avidity compared to IgG bispecific antibodies, which may prove to be particularly advantageous for those cancer cells that express relatively lower amounts of the targeted protein on their surface.

Table of Contents

Index to Financial Statements

Illustrated in the table below are several classes of bispecific T cell engaging antibodies currently in development: (i) single chain antibodies being developed by third parties that have one target binding domain and one CD3 binding domain that are small in size; (ii) antibodies being developed by third parties using IgG formats that have one or two target binding domains for the cancer cell (two binding domains increases target binding avidity) and one CD3 binding domain; and (iii) our IgM antibody with 10 target binding domains for the cancer cell (10 binding domains produces higher target binding avidity) and one CD3 binding domain.

Properties of Cancer Cell Target x CD3 T Cell Engager Antibodies

Structure (Cancer cell targets x CD3)	 Bispecific T cell/Target Engager Single Chain Binding Units	 Bispecific T cell/Target Engager IgG	 Bispecific T cell/Target Engager IgM
Mechanism of cell killing	TDCC	TDCC	TDCC + CDC
Binding sites to cancer cell targets	1	1 or 2	10
Binding sites to CD3	1	1	1
Dosing	Continuous infusion	Weekly to every other week	Planned weekly
Cytokine Release Syndrome (CRS)	Observed CRS in non-human primates; observed CRS in clinic	Observed CRS in non-human primates; observed CRS in clinic	No CRS observed in non-human primates

In our *in vitro* studies, IgM antibodies bind antigens with high avidity that results in the IgM antibody remaining attached to the target for longer periods of time than an IgG antibody. We believe that this durable binding property will translate to an increased residence time on cancer cells and will increase the chance that a T cell will find and kill the cancer cell while the T cell engager is bound to the cancer cell.

While IgG bispecific T cell engaging antibodies have demonstrated evidence of clinical benefit across several cancer types, serious adverse events and tolerability issues have been reported, including cytokine release syndrome (CRS). CRS is characterized by fever, hypotension, blood coagulation abnormalities and capillary leak. Potentially life threatening effects of CRS include cardiac dysfunction, organ failure, respiratory distress syndrome and neurologic toxicity. Such findings have also been associated with other T cell engaging approaches, including Chimeric Antigen Receptor-T cell therapies (CAR-T). Patient deaths have resulted from CRS in the clinical testing of IgG bispecific T cell engaging antibodies and CAR-T. These serious adverse events can also result in dose limiting toxicities of IgG bispecific T cell engaging antibodies and potentially limit the optimal efficacy of these therapeutic agents. The potential for CRS can also result in the need for high levels of patient monitoring, expense and inconvenience.

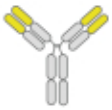
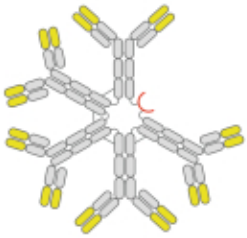
Our IgM based CD20 x CD3 bispecific antibody has shown no apparent CRS symptoms in our non-human primate studies at tested doses significantly higher than doses currently safely achievable with IgG bispecific antibodies. In addition, in human blood cell *ex vivo* studies, we observed a much lower cytokine release profile for our IgM based CD20 x CD3 bispecific antibody compared to an IgG bispecific antibody with the same CD20 and CD3 binding domains. We believe that the density of the immune synapses, the interfaces joining T cells and cancer cells, formed by our CD20 x CD3 IgM bispecific antibody between a T cell and CD20 positive target cell may be lower than the density of the immune synapses formed by bispecific IgG antibodies and CAR-T. The larger size of our bispecific

IgM, we believe, may result in fewer CD3 molecules and T cell receptors being bound per immune synapse, similar to the natural interaction of T cell receptors and tumor peptide MHC (major histocompatibility complex), a set of cell surface proteins that recognize foreign molecules as part of the immune system, as compared to higher density CD3 binding in the case of CAR-T and other bispecific T cell and target engager formats. As a consequence, we believe this may result in reduced cytokine release with our IgM bispecific antibody than with CAR-T and bispecific T cell and target engagers.

Receptor Cross-linking Agonists

We are also using our IgM platform to develop IgM antibodies that bind to members of the TNFrSF. Members of the TNFrSF must be bound in clusters of at least three in order to send a strong biological signal to the cell. This family includes targets that will cause the death of cancer cells, such as DR5, and targets that will cause the proliferation of T cells, such as OX40 and GITR.

Receptor Cross-linking Agonist IgG vs IgM Antibodies

Structure	 IgG	 IgM
Binding sites	2	10
Ability to cross-link and cluster	Limited	Strong
Functional properties	Weak agonist	Strong agonist
Molecular weight	150kDa	960kDa

There have been multiple attempts to create IgG based therapeutic antibodies directed at DR5, OX40 and GITR. However, since IgG antibodies naturally bind only two DR5, OX40 or GITR cell surface proteins, their bivalent nature inherently limits their signaling efficacy. In contrast, we are utilizing the 10 binding domains of IgM antibodies to more efficiently cross-link these molecules on the cell surface. In multiple *in vitro* cell studies, we have observed that IgM antibodies have much greater potency than IgG antibodies with the same binding domains.

Targeted Cytokines

We are leveraging our IgM platform to create bispecific IgM antibodies with high avidity to selected cell surface targets to deliver potent, immune stimulating cytokines. These IgM antibodies will initially target the delivery of IL-15 to induce immune cell stimulation and proliferation. Targeted delivery of cytokines is designed to reduce systemic toxicities of cytokine therapy while enhancing immune system activity in the tumor microenvironment. Stimulation of the IL-15 pathway may be important in strengthening and maintaining both the endogenous and the synthetic T cell immune responses.

We believe that our IgM platform has certain inherent advantages for this application. Importantly, we believe that the high avidity and long-lasting binding of our IgM antibodies may help to effectively bind and deliver the cytokine to the target cell for an extended period. We also believe that the high avidity of the IgM antibodies may allow binding and delivery of the cytokine to cells that have relatively low density of the surface target. Also, the ability of IgM antibodies to cross-link T cell stimulating targets such as OX40 and GITR may provide very potent T cell stimulation when combined with IL-15 delivery. Targeted IL-15 may also provide complementary effects when combined in a treatment regimen with our T cell engaging antibodies, such as CD20 x CD3 or our solid tumor T cell engagers.

Table of Contents

Index to Financial Statements

Our Product Candidates

We are leveraging our IgM platform to discover and develop product candidates for the treatment of cancer patients. Our lead product candidate, IGM-2323, is a CD20 x CD3 bispecific IgM antibody designed to treat patients with B cell NHL and other B cell malignancies. Our second product candidate will be an IgM antibody targeting DR5 for the treatment of patients with solid and hematologic malignancies.

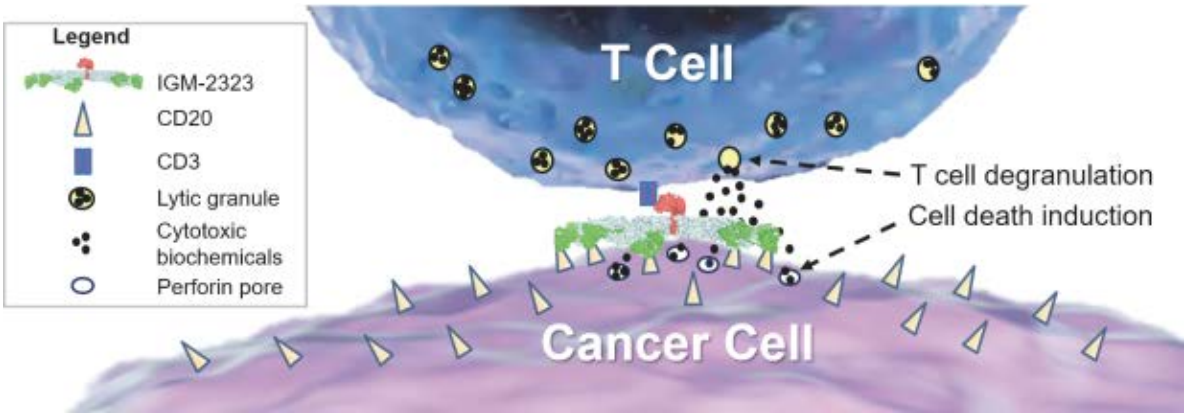
Mode	Target	Indication	Phase of Development					Worldwide Commercial Rights	Anticipated Milestone
			Discovery	Preclinical	Phase 1	Phase 2	Phase 3		
T cell Engager	IGM-2323 (CD20x CD3)	NHL and CLL						igm	Initial Phase 1 data for r/r B cell NHL: 2020
Receptor Cross-linking Agonist	IgM Antibody (DR5)	Solid and Hematologic Malignancies						igm	IND filing: 2020

IGM-2323: CD20 x CD3 Bispecific IgM Antibody

Our lead product candidate, IGM-2323, is a CD20 x CD3 bispecific IgM antibody designed to treat patients with B cell NHL and other B cell malignancies. Our initial therapeutic goal with IGM-2323 is to safely and effectively treat relapsed/refractory B cell NHL patients. CD20 is a protein that is frequently expressed on the surface of malignant B cells, while CD3 is a protein that is expressed on the surface of T cells and is an essential activating molecule of the T cell. IGM-2323 has 10 binding domains to CD20 and a single binding domain to CD3 (specifically CD3ε). In addition, IGM-2323 contains a human serum albumin molecule attached to the Joining chain (J chain) to enhance its pharmacokinetic properties. The J chain naturally occurs in IgM antibodies and joins the IgM subunits into pentameric antibodies.

IGM-2323 is designed to simultaneously and stably bind a CD20 expressing cancer cell as well as CD3 on a cytotoxic T cell, bringing both cells into close proximity. This interaction mimics the normal T cell activation pathway leading the T cell to recognize and kill the cancer cell by releasing cytotoxic biochemicals (perforins and granzymes) that penetrate and perforate the cancer cell. The TDCC mediated killing mechanism of IGM-2323 on CD20 expressing cancer cells is shown in the diagram below.

IGM-2323 Binding to a CD20 Positive Cancer Cell and Inducing TDCC

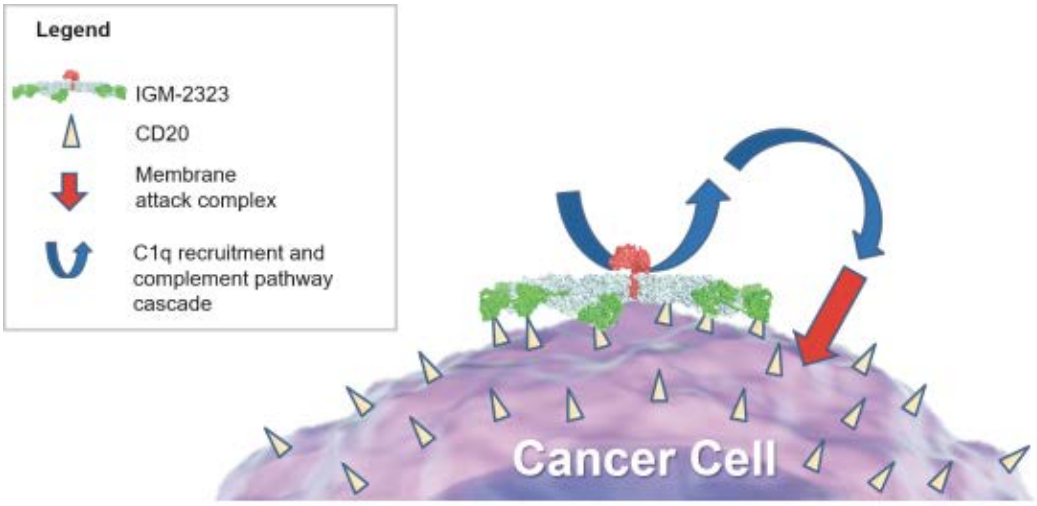


Schematic diagram of IGM-2323 binding a CD20 expressing B cancer cell and a CD3 expressing T cell for T cell directed cellular cytotoxicity (TDCC). Shown is the IGM-2323 induced T cell release (degranulation) of cytotoxic biochemicals from T cell lytic granules in close proximity to the cancer cell to induce perforin pore formation in the cell membrane, allowing cell entry of the cytotoxic biochemicals and induction of cancer cell death.

IGM-2323 also employs an additional mechanism to kill CD20 expressing cancer cells, known as complement dependent cytotoxicity (CDC). CDC is a mechanism by which antibodies can mediate specific targeted cell killing by

activating the complement system. Components of the complement system are naturally present in humans, and IgM antibodies are the most efficient antibodies at engaging the complement system for CDC, with an approximately 100 fold increase in CDC relative to comparable IgG CD20 antibodies. The CDC mediated killing mechanism of CD20 expressing cancer cells by IGM-2323 is shown in the diagram below.

IGM-2323 Binding to a CD20 Positive Cancer Cell and Inducing CDC



Schematic diagram of IGM-2323 binding a CD20 expressing B cancer cell and recruiting components of the complement system from the serum to induce complement dependent cytotoxicity (CDC) through formation of a membrane attack complex.

We believe the dual mechanisms of action of IGM-2323, both TDCC and CDC, may further enhance its efficiency in eliminating CD20 expressing cancer cells and may decrease the likelihood of cancer escape or resistance.

Non-Hodgkin's Lymphoma

B cell NHL is a group of blood cell cancers that affect the lymphatic system. NHL is among the most common cancers in the United States and Europe with more than an estimated 74,000 and 115,000 new cases diagnosed in 2018, respectively. In the United States, NHL is expected to cause approximately 20,000 cancer-related deaths in 2019. CD20 expressing B cell derived lymphomas constitute approximately 85% of NHL cases. The natural progression of NHL varies widely across multiple forms, including aggressive forms, such as diffuse large B cell lymphoma, and more slowly growing indolent forms, such as follicular lymphoma.

Systemic chemo-immunotherapy (alkylator based chemotherapy plus monoclonal antibody (mAb) therapy directed at the B cell antigen CD20) is the current standard of care of treatment for advanced stage disease in most NHL patients. This standard of care for B cell NHL generally includes treatment with the CD20 IgG antibody rituximab. While this treatment is generally effective, a significant percentage of patients are either initially refractory to rituximab treatment or eventually relapse following rituximab treatment. For instance, some patients may enter treatment with relatively low CD20 expression on their cancer cells and present with refractory disease. Other patients may have early success with rituximab treatment, yet eventually develop resistance to rituximab treatment due to selection pressure towards the survival of relatively lower CD20 expressing cancer cells resulting from the rituximab therapy. Treatment with combination chemo-immunotherapy, such as with rituximab, or high dose chemotherapy and bone marrow transplant, is generally effective and may cure approximately 50-70% of patients with aggressive B cell NHL. Indolent B cell NHL, which represents approximately 40% of cases, remains mostly incurable at advanced stages with current therapies.

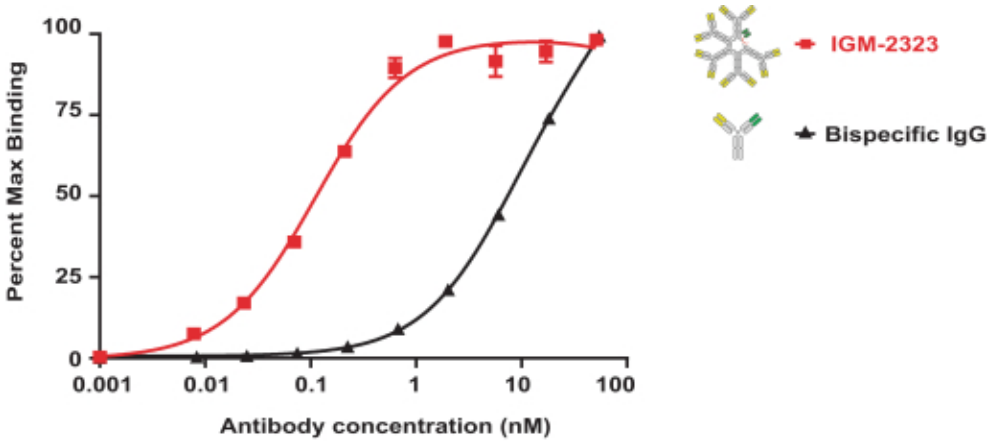
For patients with B cell NHL that is relapsed/refractory to CD20 therapy, additional therapeutic options are used and include synthetic immune approaches, such as CAR-T. While these approaches have been demonstrated to lead to

high response rates, they have also been associated with life-threatening and sometimes fatal toxicities, including severe CRS and severe neurotoxicity. Additionally, the number of weeks required to produce the CAR-T treatment product and the high cost of treatment limit access to such treatment. Other therapeutic options generally do not improve survival outcomes, and the majority of relapsed/refractory patients succumb to their disease. As a result, there is an acute need for therapeutic advances that are able to target the lower levels of CD20 expressed on the surface of relapsed/refractory B cell NHL. Additionally, drugs that are well tolerated and effective enough to be utilized as initial therapy of B cell NHL, where the opportunity to achieve cures is highest, are also needed.

Preclinical Data

In contrast to other bispecific antibody formats that bind to one or two cell CD20 molecules on the surface of the cancer cell and to one CD3 molecule on the surface of the T cell, IGM-2323 has 10 binding domains to CD20 and one binding domain to CD3. The figure below shows the results of our *in vitro* studies that demonstrate the enhanced binding power of IGM-2323 to a CD20 expressing B cell cancer line compared to a bispecific IgG antibody. As shown in the figure below, IGM-2323 was able to achieve approximately 70x stronger binding as compared to a bispecific IgG antibody with the same CD20 and CD3 binding domains at equal concentrations. We believe that IGM-2323 with its 10 binding domains for CD20 may successfully bind to CD20 expressing cancer cells with more avidity compared to an IgG bispecific antibody with only one binding domain for CD20, which may prove to be particularly advantageous for those cancer cells that express relatively lower amounts of CD20 on the cancer cell surface.

Relative Binding Strength of IGM-2323 and an IgG Version of IGM-2323 to CD20 Expressing Cells



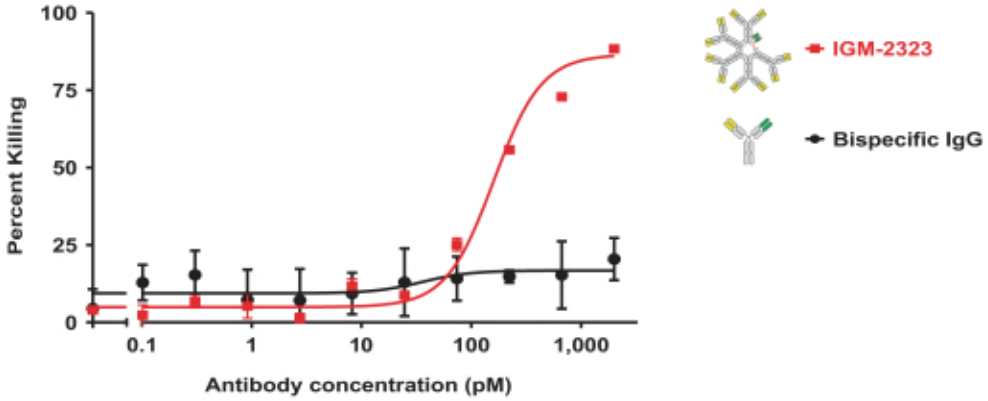
Human CD20 expressing B cells (Ramos cell line) was incubated for 30 minutes with increasing concentrations of either IGM-2323 or a bispecific IgG version with the same CD20 and CD3 binding domains and antibody binding was determined by flow cytometry. Shown are the means ± 1 standard deviation values of the maximum value obtained in the assay (100%). Similar results were obtained in three repeat assays.

In our *in vitro* studies, IgM antibodies bind antigens with high avidity that results in the IgM antibody remaining attached to the target for longer periods of time than an IgG antibody. We believe that this durable binding property will translate to an increased residence time on cancer cells and will increase the chance that a T cell will find and kill the cancer cell while the T cell engager is bound to the cancer cell. This is exemplified in the figure below, where it was observed that IGM-2323 killed approximately 68% more cancer cells than the bispecific IgG antibody administered at equal concentrations with a ratio of one T cell to five cancer cells. This *in vitro* study demonstrates that a B cell cancer line is killed more efficiently by IGM-2323 than a bispecific IgG antibody under conditions where T cells are limited in number.

Table of Contents

Index to Financial Statements

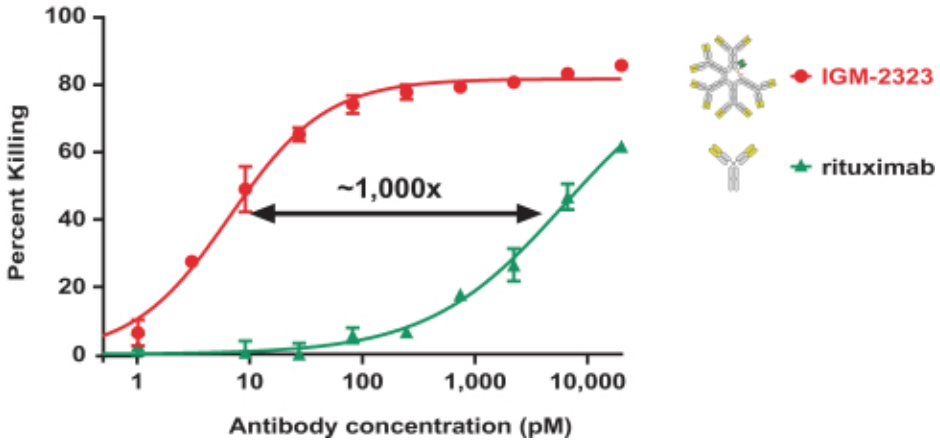
Relative Killing of a B cell Cancer Line by IGM-2323 vs an IgG Bispecific Antibody



A mixture of lymphoma cells (Ramos cell line) and human T cells were incubated with either IGM-2323 or a bispecific CD20 x CD3 IgG antibody at a ratio of one T cell to five cancer cells for 48 hours. Cell killing was evaluated by flow cytometry and means ± 1 standard deviations are shown and is representative of two repeat studies.

Also due to the 10 binding domains to CD20, we believe that IGM-2323 may perform well in those clinical circumstances in which CD20 expression has been reduced due to prior treatment with rituximab. This performance has been modeled by laboratory studies which were designed to mimic the clinical situation in which CD20 target expression on cancer cells is reduced, such as in cancers that have relapsed or are resistant to the standard of care therapy rituximab. As shown in the figure below, in our laboratory studies with these rituximab resistant cells, IGM-2323 had up to 1,000 fold increased potency in killing resistant cancer cells compared to rituximab.

Relative Killing Activity of IGM-2323 and Rituximab Using a Rituximab Resistant B cell Cancer Line



A rituximab resistant Ramos B cell cancer line was incubated with increasing concentrations of IGM-2323 or rituximab in the presence of human complement, T cells and natural killer (NK) cells from human peripheral blood mononuclear cell preparations for 48 hours and cell killing was evaluated by flow cytometry. Shown are the means ± 1 standard deviations of a representative study from three repeat studies.

While IgG bispecific T cell engaging antibodies have demonstrated evidence of clinical benefit across several tumor types, serious adverse events and tolerability issues have been reported, including CRS. CRS is characterized by fever, hypotension, blood coagulation abnormalities and capillary leak. Potentially life threatening effects of CRS include cardiac dysfunction, organ failure, respiratory distress syndrome and neurologic toxicity. Such findings have also been associated with other T cell engaging approaches, including CAR-T. Patient deaths have also resulted from

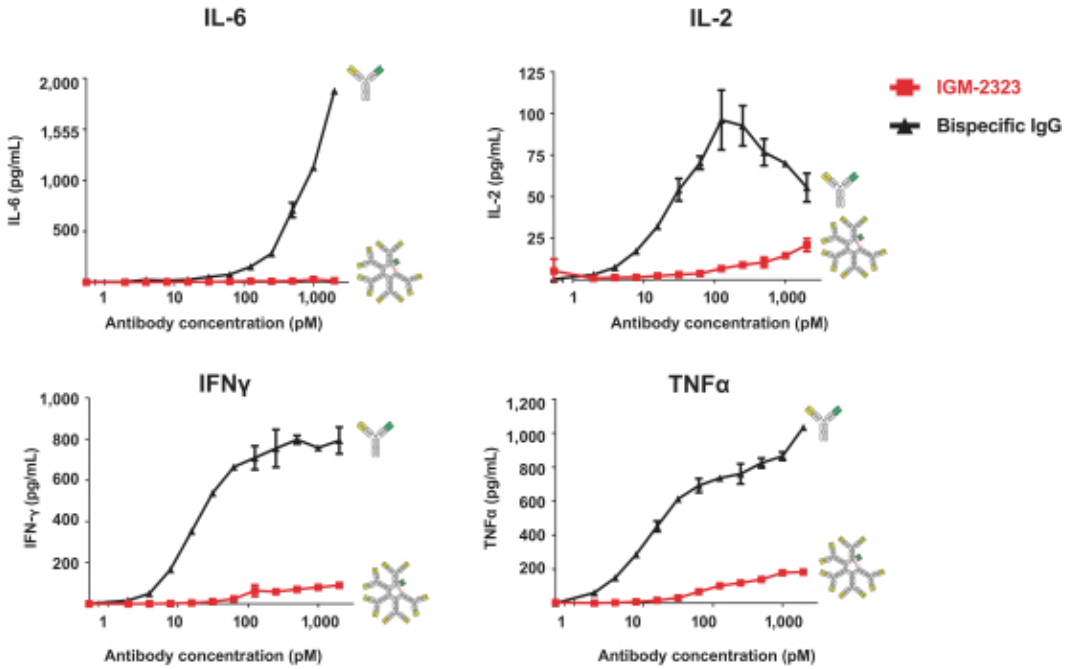
Table of Contents

Index to Financial Statements

CRS in the clinical testing of IgG bispecific T cell engaging antibodies and CAR-T. These serious adverse events can also result in dose limiting toxicities of IgG bispecific T cell engaging antibodies and potentially limit the optimal efficacy of these therapeutic agents. The potential for CRS can also result in the need for high levels of patient monitoring, expense and inconvenience.

In addition to enhanced binding to low CD20 expressing tumors, IGM-2323 has been shown to have a lower cytokine release profile associated with the TDCC mechanism of action compared to an IgG based CD20 x CD3 antibody with the same CD20 and CD3 binding domains, when tested *in vitro* with human T cells and human B cells. Shown in the figure below is the expression of inflammatory cytokines interferon gamma (IFNg), tumor necrosis factor alpha (TNFa), IL-6 and IL-2 released after incubation of CD20 expressing B cells, T cells and IGM-2323 or a comparable bispecific IgG antibody.

Comparison of Cytokine Release from IgM Bispecific IGM-2323 and
an IgG Version of IGM-2323 *in vitro*



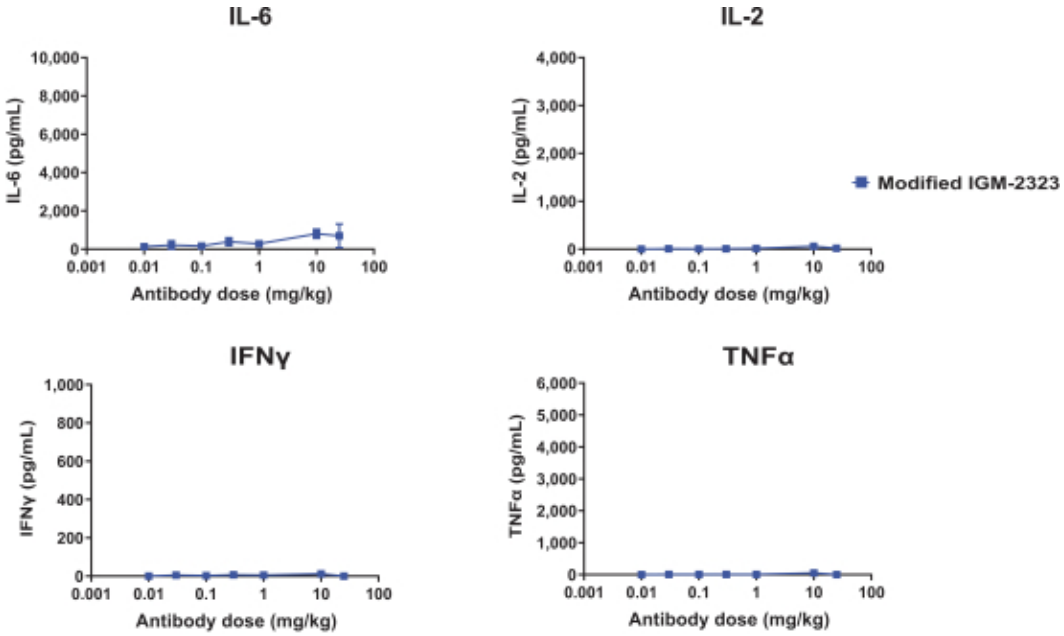
Human peripheral blood cells containing CD20 expressing B cells, T cells and NK cells were incubated for approximately 24 hours with increasing concentrations of IgM bispecific IGM-2323 and an IgG version with the same CD20 and CD3 binding domains in vitro. Shown are the means ± 1 standard deviation levels of cytokines released into the culture medium from a representative study from two repeat studies.

We have also evaluated inflammatory cytokine release in non-human primate studies using a modified version of IGM-2323 that interacts with cynomolgus monkey T cells (TDCC and CDC mechanisms). As shown below, a dose dependent evaluation of the modified version of IGM-2323 resulted in minimal increases in expression of inflammatory cytokines interferon gamma (IFNg), tumor necrosis factor alpha (TNFa), IL-6 and IL-2 in plasma.

Table of Contents

Index to Financial Statements

Peak plasma inflammatory cytokine levels in non-human primates following treatment with a modified version of IGM-2323



Non-human primates were treated intravenously with single doses of a slightly modified version of IGM-2323 that interacts with monkey CD3, at doses ranging from 0.01 to 25 mg/kg. Peak plasma inflammatory cytokine levels were measured at various time points between 1 and 48 hrs after intravenous administration of the modified IGM-2323. There were one to four data points per dose, and either single data points or mean values ± 1 standard deviation are shown when two or more data points were obtained.

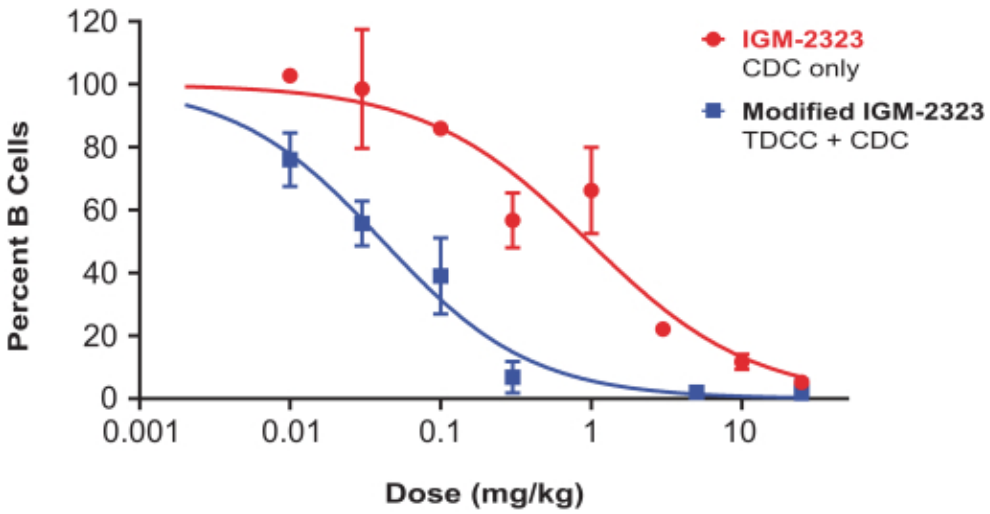
We have evaluated the potential of the IGM-2323 bispecific format to kill CD20 expressing B cells in mouse studies. In a disseminated lymphoma mouse study using human B cell line Raji with human peripheral blood T cells, IGM-2323 dosed at 0.5 mg/kg improved survival in mice with 90% surviving to 46 days whereas no mice survived beyond day 25 when treated with vehicle.

We have also evaluated IGM-2323 in non-human primate studies. As shown below, a dose dependent depletion of B cells from blood was observed with IGM-2323 (CDC mechanism only) and a modified version of IGM-2323 that interacts with monkey T cells (TDCC and CDC mechanisms). These studies established (i) that IGM-2323 can mediate CDC-dependent depletion of CD20 positive B cells in vivo, and (ii) that the addition of TDCC to CDC, as mediated by the modified version of IGM-2323 in monkeys, improves the potency of B cell depletion by roughly 20 fold.

Table of Contents

Index to Financial Statements

Dose-dependent B cell depletion (CD19+) in non-human primates



Non-human primates were treated with single doses of IGM-2323 or a slightly modified version of IGM-2323 that interacts with monkey CD3, at doses ranging from 0.01 to 25 mg/kg. Depletion of B cells was analyzed by flow cytometry at 24 hours post dose using the B cell marker CD19. There were two animals per group, and mean values ± 1 standard deviation are shown compared to baseline values prior to treatment (100%). Data from three studies were compiled and fitted to a four parameter curve. This data indicates an approximately 20-fold enhanced potency with combined TDCC and CDC mechanisms.

Repeated dosing of the modified version of IGM-2323 has also been evaluated in non-human primate GLP studies. Data from these studies, shown below, demonstrated that the modified version of IGM-2323 could efficiently eliminate B cells in the blood, as well as in secondary B cell tissues such as spleen and lymph nodes. An alternative marker of B cells, CD19, was used in these studies to prevent potential interference in B cell detection by the IgM binding to CD20. We observed no evidence of toxicity up to the maximum studied repeat dose of 25 mg/kg, which is two-fold greater than the intended maximal clinical dose of IGM-2323. We believe these data support clinical development of IGM-2323 as a potential treatment for CD20 expressing B cell malignancies while maintaining limited toxicity.

B cell Depletion (CD19+) in Non-human Primates

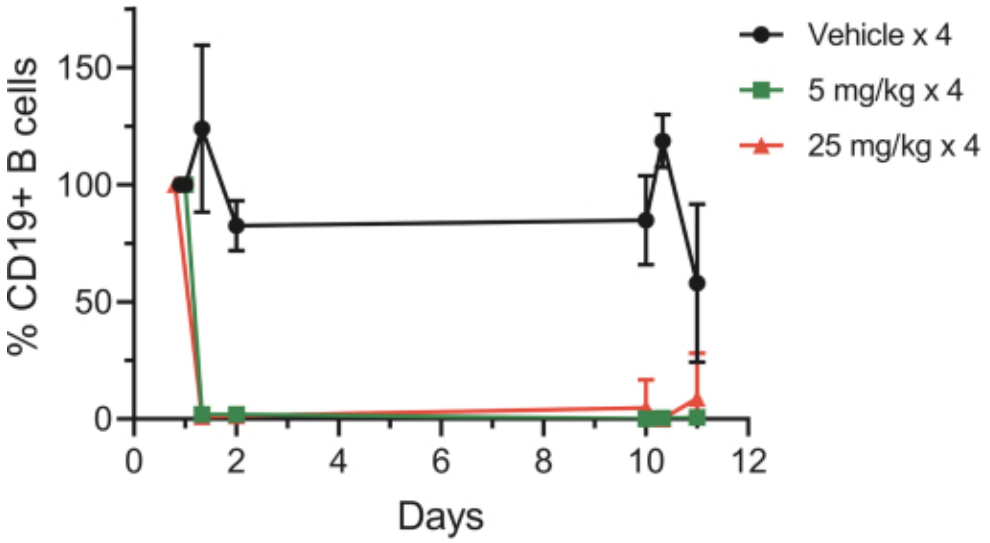
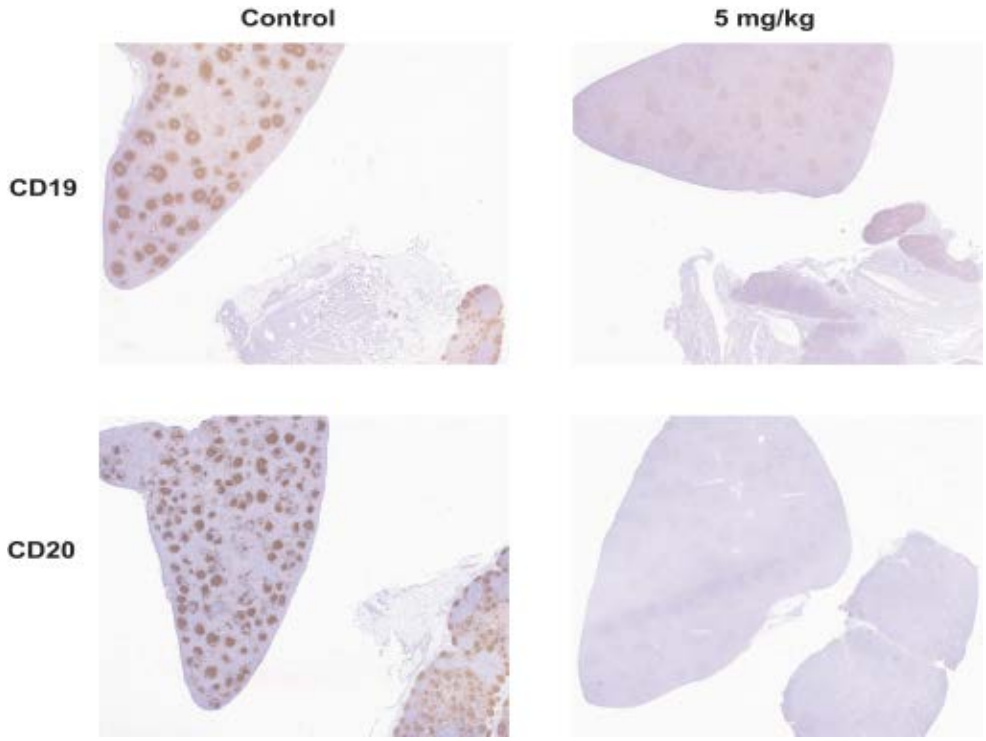


Table of Contents

Index to Financial Statements

Cynomolgus monkeys were treated every three days with either vehicle or a slightly modified version of IGM-2323 that interacts with non-human primate CD3 at 5 mg/kg or 25 mg/kg. Peripheral blood was analyzed by flow cytometry for CD19 expressing B cells and the mean values ± 1 standard deviation are shown compared to baseline values prior to treatment. The number of animals per group was: vehicle n=10; 5 mg/kg, n=6; and 25 mg/kg, n=10.

Histologic Images of B cell Killing (CD19 and CD20) in Non-human Primates



Cynomolgus monkeys were injected every three days with either vehicle or a slightly modified version of IGM-2323 that interacts with non-human primate CD3 at 5 mg/kg. Immunohistochemistry was used to detect CD19 and CD20 positive B cells in non-human primate spleen and mesenteric lymph nodes from a control animal or an animal that received four doses at 5 mg/kg of the modified version of IGM-2323 is shown at day 11 post treatment initiation and is representative data from six animals evaluated per group.

Clinical Development Plan

We plan to develop IGM-2323 as a treatment for patients diagnosed with CD20-expressing malignancies. We intend to dose the first patient in a Phase 1 clinical trial to evaluate IGM-2323 in relapsed/refractory B cell NHL patients in 2019. In this planned multi-center open label trial, we expect to study IGM-2323 initially as a single agent, where it will be administered intravenously at a planned fixed-dose, as part of a dose escalation in single patient cohorts followed by 3+3-based protocol, up to a planned dose of 1000 mg, in patients with relapsed/refractory B cell NHL. IGM-2323 will be administered three times per cycle (each cycle is 21 days) for a period of four cycles. The dose limiting toxicity window will be evaluated in the first cycle. The objective of this Phase 1 study is to provide an initial assessment of the safety, pharmacokinetics and preliminary efficacy of IGM-2323 in relapsed/refractory B cell NHL patients. If the therapy appears to be safe and tolerable and significant evidence of efficacy, such as durable complete responses, is observed, we will expand the clinical testing of IGM-2323 in additional relapsed/refractory patients expected to express CD20 on their cancer cells, including diffuse large B cell lymphoma and/or relapsed/refractory follicular lymphoma, and potentially further to relapsed/refractory chronic lymphocytic leukemia. Additional combination studies adding IGM-2323 to standard of care regimens in earlier lines of treatment may be developed based upon initial results from this planned Phase 1 study.

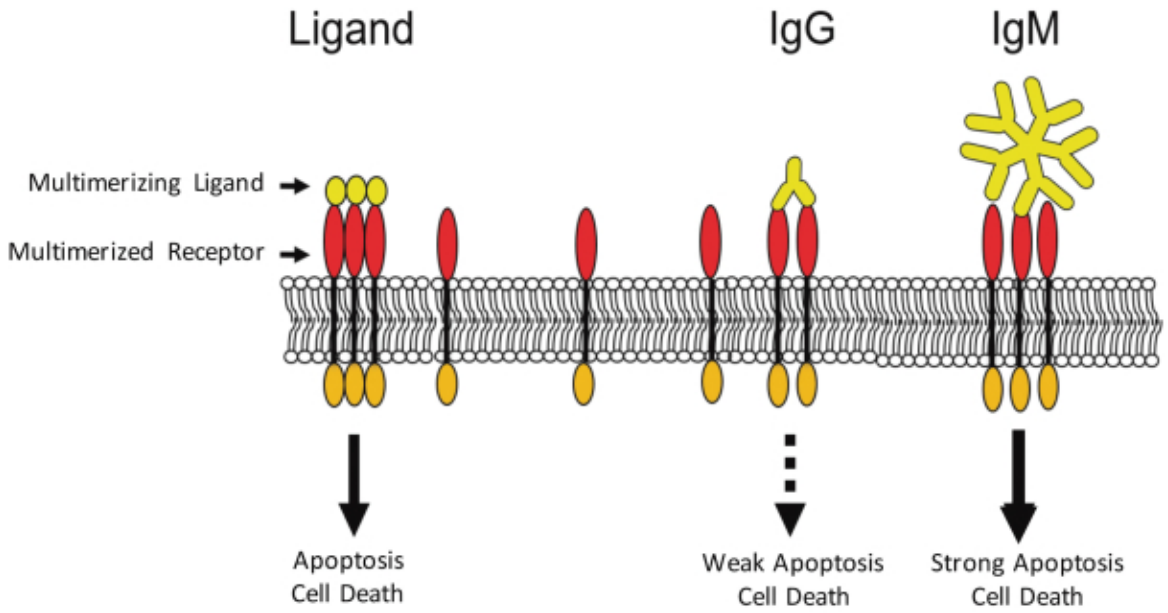
Table of Contents

Index to Financial Statements

Death Receptor 5 Agonist IgM Antibody

Our second product candidate will be an IgM antibody targeting DR5 for the treatment of patients with solid and hematologic malignancies. DR5 is a member of the TNFrSF and is often expressed on the surface of cancer cells. Similar to other members of the TNFrSF, strong signaling to effect a biological response requires that three or more DR5 receptor proteins be cross-linked together on the surface of a cancer cell through the binding of either the natural DR5 ligand (TRAIL) or an antibody or other therapeutic drug that can efficiently cross-link the DR5 receptors. Binding and cross-linking of DR5 receptors sends a signal to the cancer cell to induce programmed death of cancer cells, also known as apoptosis.

DR5 Signaling to Induce Programmed Death of Cancer Cells



Solid and Hematologic Malignancies

DR5 is expressed in a broad range of solid tumors (*e.g.*, colon, gastric, pancreatic, lung, breast and prostate tumors) as well as leukemias and lymphomas. Although DR5 is expressed on some normal cells in the body, cancer cells have been shown to be more sensitive to DR5 signaling compared to cells of healthy tissues. Various IgG DR5 antibodies have been tested in early stage clinical trials by other companies, but these IgG antibodies failed to demonstrate adequate efficacy. As IgG DR5 antibodies only bind to two DR5 receptors, these IgG antibodies may not have created sufficient cross-linking of DR5 to send an efficient apoptotic signal to the cancer cells, which may account for the relatively small number of monotherapy responses observed in the clinical trials of these IgG antibodies. In contrast, DR5 IgM antibodies have the capacity for multivalent binding of DR5, which results in cross-linked DR5 receptors on the cell surface.

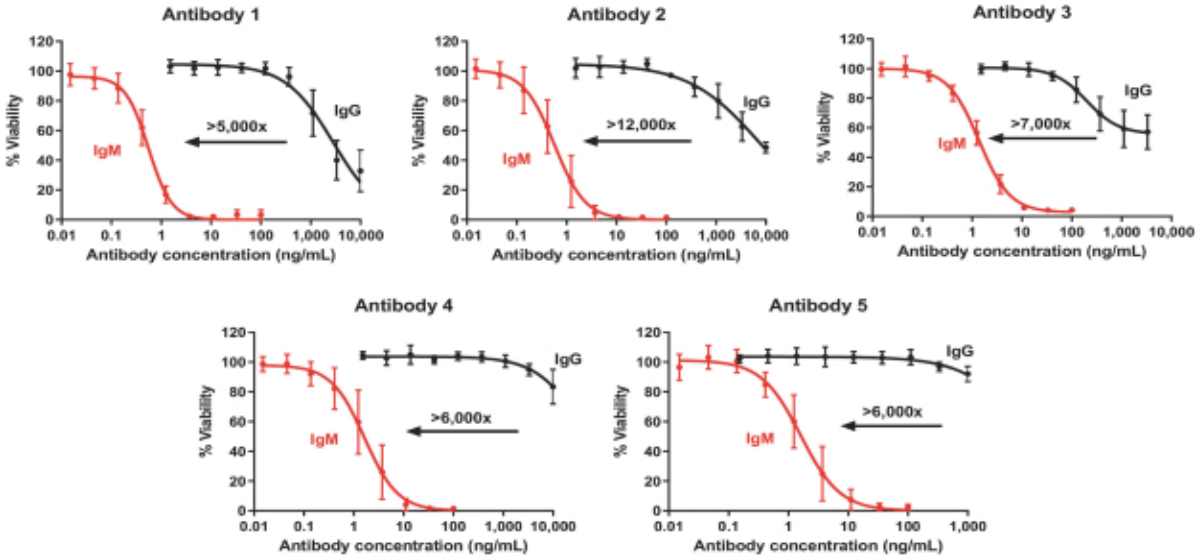
Table of Contents

Index to Financial Statements

Preclinical Data

In our laboratory studies, shown in the figure below, multiple DR5 IgM antibodies showed significantly enhanced *in vitro* efficacy compared to an IgG antibody with the same binding domains, often resulting in at least >1,000 fold increased potency in killing cancer cells from multiple cancer cell types with encouraging *in vitro* toxicity data. As shown in the figures below, we observed that multiple different engineered DR5 IgM antibodies were able to kill cancer cells at concentrations of 5,000-12,000 fold less than DR5 IgG antibodies with the same binding domains at equal concentrations.

Cell Line Killing Comparison of DR5 IgG and IgM Antibodies with Five Different Binding Domains



Human colon cancer cell line Colo205 was incubated in vitro with either DR5 IgG antibodies or IgM antibodies with the same binding domains at increasing concentrations. The ability of the antibodies to kill the cancer cells was tested after 24 hours of incubation. Shown are means ± 1 standard deviations of the percent viable (surviving cancer cells) cells at each antibody concentration tested. Studies were repeated between 2-6 times with similar results.

We have also demonstrated superior cancer cell killing by DR5 IgM antibodies in multiple *in vivo* tumor models compared with IgG antibodies. In these *in vivo* studies of human colorectal tumors, we observed that engineered DR5 IgM antibodies were able to significantly improve the killing of colorectal tumors resulting in at least a 2-3 fold delay in tumor growth, with some mice being tumor-free, as compared to DR5 IgG antibodies at equal concentrations. This ability to kill cancer cells was significantly enhanced when IgM antibodies were tested in combination with common chemotherapeutic drugs. In multiple *in vitro* studies on human hepatocytes, our DR5 IgM antibody did not induce toxicity at doses that are expected to be therapeutically active. In preliminary studies in cynomolgus monkeys, our DR5 IgM antibody did not induce toxicities when tested at doses up to 10 mg/kg.

Clinical Development Plan

Based on the encouraging activity observed in multiple *in vitro* and *in vivo* studies, we believe that our DR5 IgM antibodies may produce effective apoptotic signaling in cancer cells and have the potential to treat patients with solid and hematological malignancies, either as a stand-alone agent or in combination with chemotherapeutic drugs or other apoptotic pathway agents. We plan to file an IND for a DR5 IgM antibody in 2020 in order to begin clinical testing in solid and hematologic malignancies. The proposed multi-center open label Phase 1 clinical trial would study our DR5 IgM antibody intravenously administered as part of a staggered monotherapy and in combination with chemotherapy 3+3 dose escalation in Phase 1 patients with solid tumor and hematologic malignancies. The objective of this Phase 1 clinical trial would be to provide an initial assessment of pharmacokinetics, safety, biomarker evaluation and preliminary efficacy of our DR5 IgM antibody both as a single agent and in combination with a defined chemotherapy regimen, based on standard cancer response criteria. Additional combination studies in

Table of Contents

Index to Financial Statements

different indications with different combination regimens expected to act synergistically with our DR5 IgM antibody may be developed based upon initial results from this planned Phase 1 clinical trial. We may also decide to enter more than one DR5 antibody into initial clinical trials.

Research and Discovery Programs

The following table highlights discovery programs that we are prioritizing:

Mode	Target	Indication	Worldwide Commercial Rights
T cell Engagers	CD123 x CD3	Acute Myeloid Leukemia	IGM
	CD38 x CD3	Multiple Myeloma	
	Multiple Targets x CD3	Multiple Solid Tumors	
Receptor Cross-linking Agonists	OX40	Solid and Hematologic Malignancies	IGM
	GITR		
Targeted Cytokines	Multiple Targets x IL-15	Solid and Hematologic Malignancies	IGM

We estimate that these discovery programs are at least two years away from clinical studies, assuming they meet our requirements for advancement. We do not anticipate advancing all of these programs into clinical testing, and some of these programs may be supplanted by other IgM discovery programs.

T cell Engaging Antibodies

We have begun conducting research on a broad range of cancer cell targets with our proprietary bispecific T cell engaging IgM antibodies. We believe that our IgM platform will allow for treatment with a relatively favorable cytokine release profile with respect to a variety of cancer cell targets, including those targets which are expressed at a relatively low level on the surface of cancer cells.

Our initial T cell engaging research and development efforts are focused on the following targets:

CD123 x CD3

Acute myeloid leukemia (AML) is the leading cause of leukemia mortality in the United States, with more than 20,000 new patients diagnosed per year and a five-year survival of less than 30%. This five-year survival rate further decreases to approximately 10% in patients over 60 years old. Few advances have been made in the treatment of AML patients within the last 40 years, and current treatment options primarily consist of intense chemotherapy and stem cell transplantation.

Several different approaches have been taken to target cell surface molecules on AML cells to utilize T cells to kill AML cells. One such surface molecule, CD123 (also known as IL-3 receptor alpha chain), is expressed on the cancer cells of more than 90% of AML patients. In addition, CD123 is often highly expressed on the cancer cells of patients who have genetic mutations associated with a very poor prognosis. CD123 is also a clinically validated target for certain hematological malignancies. In 2018, a CD123 targeting therapeutic tagraxofusp (IL-3 recombinantly fused to a truncated diphtheria toxin) was approved by the FDA for blastic plasmacytoid dendritic cell neoplasms and is in clinical trials for additional hematological malignancies.

Phase 1 clinical studies have been conducted with CD123 x CD3 bispecific antibodies by other companies. Although early signs of clinical efficacy have been reported in some patients, severe CRS and some patient deaths have also been observed with these T cell engaging antibodies directed at CD123. We believe that the cytokine release profile of our IgM platform may allow us to effectively treat these patients with an acceptable tolerability profile. *In vitro* TDCC assays using CD123 expressing AML cell lines have demonstrated that a CD123 x CD3 IgM antibody can induce potent T cell redirected killing of AML cancer cell lines. Studies are currently underway to examine if this bispecific antibody also exhibits low levels of cytokine release, similar to IGM-2323.

Table of Contents

Index to Financial Statements

CD38 x CD3

Multiple myeloma (MM) is a malignant disease caused by mature antibody producing B cells hyper-proliferating in the bone marrow. In the United States in 2019, an estimated 32,000 new cases of MM are expected to be diagnosed and approximately 13,000 deaths are expected to be associated with the disease. Although advances have been made in the treatment of MM, most patients eventually relapse after treatment, and the five-year survival rate is approximately 50%.

CD38 is a cell surface protein that has been shown to be effective and important in the treatment of MM patients. It can be expressed at high levels on the surface of MM cells, and it is the target of the monospecific IgG based antibody daratumumab, which has been approved for the treatment of patients with relapsed or refractory MM. Although most patients initially respond to CD38 monospecific IgG antibodies, either as monotherapies or in combination with other drugs, a significant number of these patients eventually develop progressive disease. As with CD20, we believe that bispecific T cell engagers directed at CD38 may be able to effectively treat some of these relapsed/refractory patients. *In vitro* studies with CD38 expressing MM cell lines have demonstrated that CD38 x CD3 IgM antibodies can induce potent TDCC killing of MM cancer cell lines, and these IgM bispecific antibodies were shown to be more potent *in vitro* than an IgG antibody that uses the antibody-dependent cellular cytotoxicity (ADCC) mechanism of killing.

Other Cancer Cell Targets x CD3

The high avidity provided by the 10 binding domains of our IgM platform may also provide significant advantages in the treatment of patients with solid tumors compared with IgG based bispecific formats. For example, our high avidity format may allow us to target cancer cells that express relatively low cell surface levels of the targeted tumor associated antigen. It may also allow us to target difficult solid tumor targets such as carbohydrates and glycosylated proteins that are challenging to bind with low affinity IgG antibodies. Our candidate selection strategy is to prioritize well characterized tumor targets where we believe an IgM bispecific antibody may have significant advantages over standard IgG bispecific approaches.

Receptor Cross-linking Agonists

We are also conducting research on additional TNFrSF agonist targets with the goal of enhancing the activity and proliferation of T cells in order to improve immune system responses to cancer. T cells express certain activation molecules on their surface, and stimulation of these activation targets can enhance T cell activation and proliferation, which can be helpful in inducing stronger immune responses to cancer. The TNFrSF includes several of these T cell activator proteins, including OX40 and GITR. As with DR5, these members of the TNFrSF must be bound in clusters of at least three in order to send a strong biological signal to enhance immune responses.

As with DR5, there have been multiple attempts to create IgG-based therapeutic antibodies directed at OX40 and GITR. However, since bivalent IgG antibodies naturally bind only two OX40 or GITR cell surface proteins, their bivalent nature inherently limits their signaling efficacy. In contrast, we are utilizing the 10 binding domains of IgM antibodies to efficiently cross-link these molecules on the T cell surface. Using *in vitro* testing systems, we have observed that IgM antibodies have much greater potency than IgG antibodies with the same binding domains.

OX40

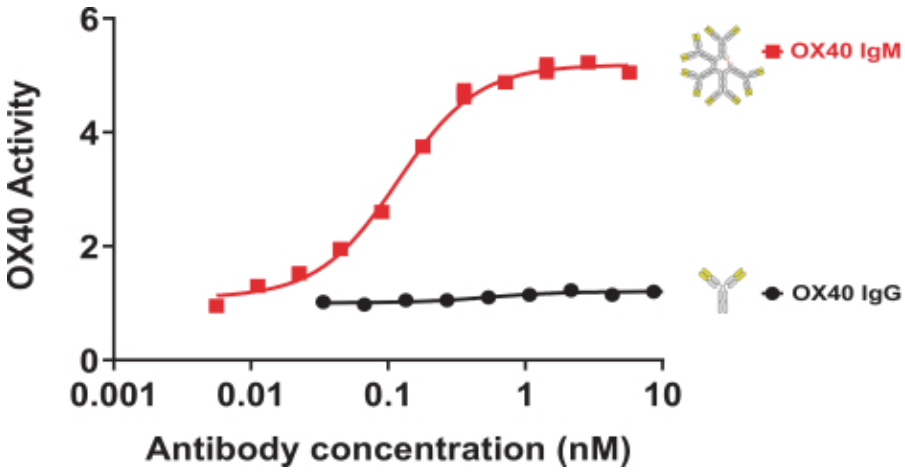
OX40 is a stimulatory molecule expressed on T cells shortly after the initiation of T cell activation. When OX40 is bound by its natural ligand, OX40L, which is expressed on antigen presenting cells such as dendritic cells or macrophages, it results in a signal to the T cell that stimulates proliferation, cytokine production and memory T cell generation.

As with other members of the TNFrSF, at least three OX40 molecules must be bound and efficiently cross-linked on the cell surface to produce a productive signal in the T cell. Shown below is an *in vitro* study demonstrating the greater ability of an IgM antibody in producing a functional signal in an OX40 activity reporter cell line assay compared to an IgG antibody.

Table of Contents

Index to Financial Statements

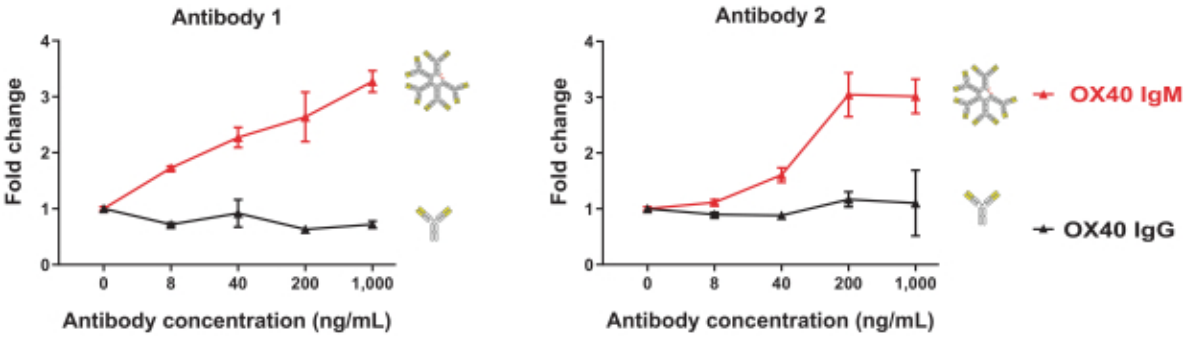
Comparative Signaling Potential of IgM and IgG Antibodies Targeting OX40 in an Activity Reporter Cell Line



A human reporter cell line, U2OS, expressing OX40 and a luciferase reporter gene activated by a downstream signaling component of OX40, NFkB, was used to measure OX40 activity. The reporter cell line was incubated with increasing concentrations of OX40 IgM or IgG antibodies with the same binding domains. OX40 activity, as indicated by increasing levels of NFkB-induced luciferase gene expression that produced luminescence, was evaluated after approximately 16 hours. Shown are mean ± standard error of the mean OX40 activity, as measured by relative luminescence units x 10⁵, and is a representative study from three repeat studies.

Furthermore, as shown below, when tested *in vitro*, the IgM OX40 antibodies increased cytokine production by human T cells (shown is cytokine TNFa) beyond that of IgG antibodies with the same binding domains.

An OX40 IgM Antibody Enhances TNFa Secretion above that of an IgG Antibody with Human T cells



Human T cells in peripheral blood mononuclear preparations were stimulated with CD3 antibodies and a co-stimulatory agonist (TLR9 agonist) and were incubated with increasing concentrations of OX40 IgG or IgM antibodies with the same binding domains. Two separate antibody sequences were tested in IgG and IgM formats. Cytokine tumor necrosis factor alpha (TNFa) levels were measured after three days. Shown are means ± standard error of mean fold change in TNFa secretion in one donor, which are representative of 4 individual donors studied.

GITR

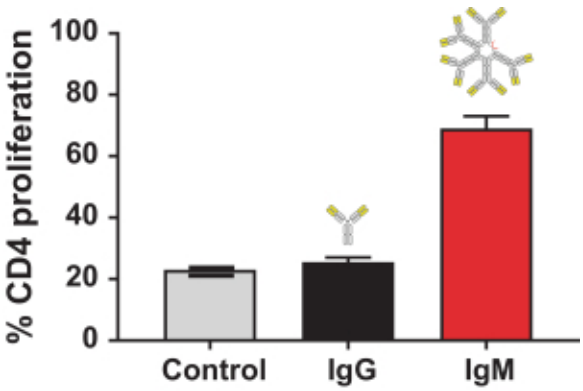
Glucocorticoid-induced TNFr-related protein (GITR) is a cell surface molecule expressed on both activated T cells and immunosuppressive regulatory T cells (T-regs). T-regs are a subset of T cells which block other T cells from seeking out and killing tumors. The natural ligand of GITR, GITRL, is expressed on antigen presenting cells such as dendritic cells and macrophages, and it is able to create the dual benefit of causing effector T cells to proliferate and produce immunostimulatory cytokines and inhibiting the effect of immunosuppressive T-regs.

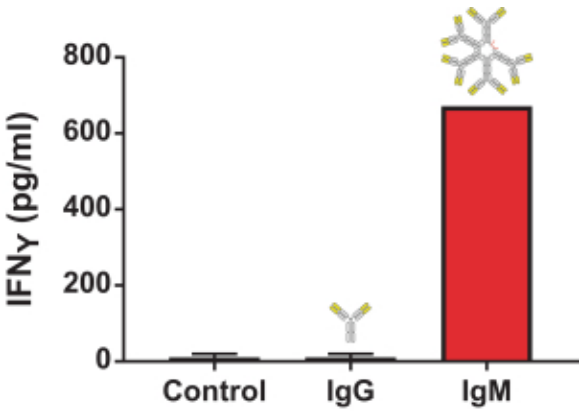
Table of Contents

Index to Financial Statements

Similar to DR5 and other members of the TNFrSF, cross-linking of GITR receptors is required for effective biological signaling. As GITR is also expressed on immunosuppressive T-regs, we compared a GITR IgM antibody to a comparable IgG antibody in the presence of these immunosuppressive T-regs. In our *in vitro* tests, as shown below, a GITR IgM antibody significantly increased the immune stimulatory cytokine production (shown as IFNg production below) and proliferation of the CD4+ T cells compared to an IgG antibody with the same binding domain.

Human CD4+ T cell Proliferation and IFNg Secretion are Significantly Enhanced by GITR IgM Antibodies





In vitro differentiated T-regs were incubated with human CD4+ T cells in the ratio of 1:4 in the presence of CD3 antibodies. GITR IgM or IgG antibodies at 40 ng/mL were incubated with the co-culture and effects on CD4 proliferation or IFNg secretion into the media were evaluated after four days. Shown are mean values ± standard error of the mean from a representative study from 3 donors.

Targeted Cytokines

Our IgM platform also allows us to deliver payloads, including immune system stimulating cytokines, which are targeted with the strong and durable binding power of the 10 binding domains of an IgM antibody.

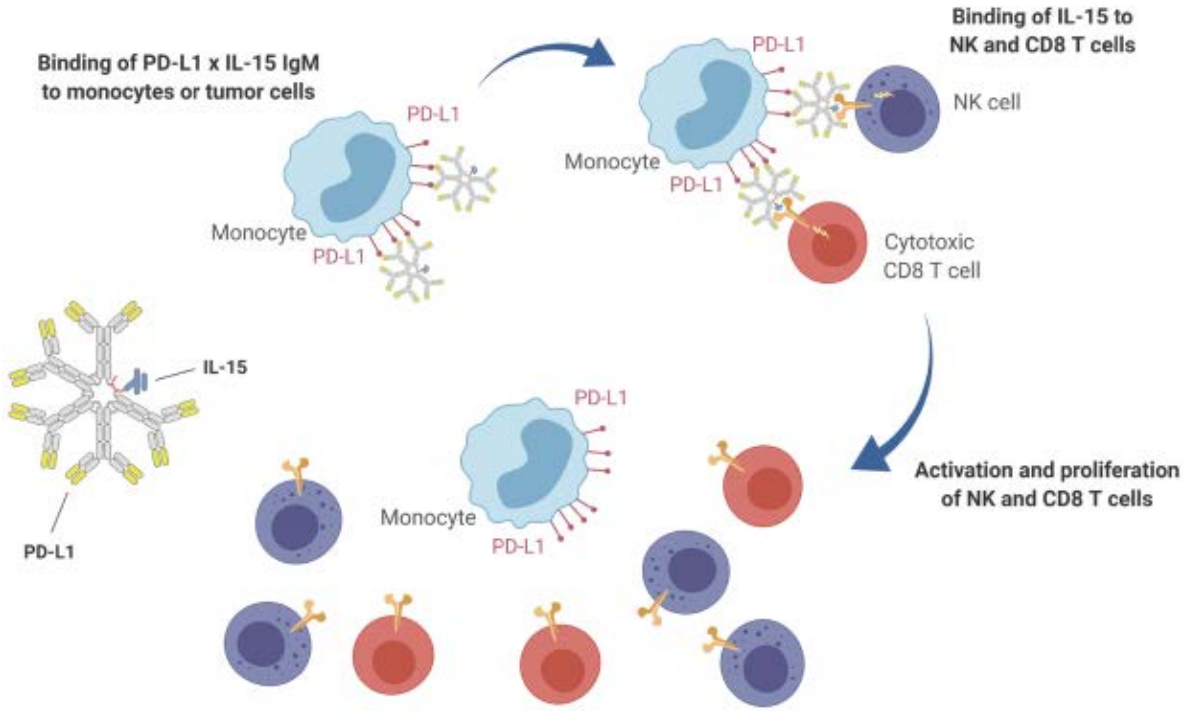
IL-15

Our first targeted cytokine is expected to be IL-15. In nature, IL-15 stimulates T cells and NK cells to proliferate and maintain their long-term survival. Our IgM platform allows us to attach IL-15 to the J chain of a targeting IgM antibody. We believe that this targeted delivery system for IL-15 will lead to the proliferation of T cells and NK cells in the area of the cells targeted by the IgM antibody.

Table of Contents

Index to Financial Statements

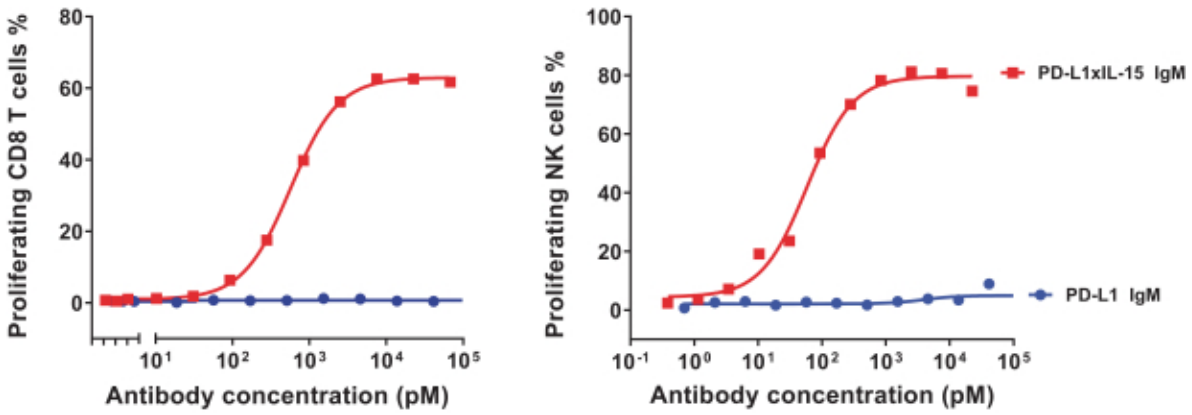
PD-L1 Targeting IgM Antibody with IL-15



Schematic diagram of a PD-L1 IgM antibody (green binding domains) with IL-15 (red oval) attached to the J chain and subsequent binding to PD-L1 expressing cells and activation of CD8 T cells and NK cell proliferation with IL-15.

As a proof of concept IL-15 delivery molecule, we created a PD-L1 IgM antibody with IL-15 attached to the J chain. This PD-L1 x IL-15 bispecific antibody dramatically enhanced the proliferation of CD8 T cells and NK cells in our *in vitro* testing. As shown in the figures below, we observed that a PD-L1 IgM antibody with IL-15 attached to the joining chain increased proliferation in approximately 60% of CD8 T cells and 80% of NK cells, while a PD-L1 IgM antibody without IL-15 attached to the joining chain did not increase proliferation in CD8 T cells and NK cells.

Comparative Activity of the PD-L1 IgM Antibody with and without IL-15 Fused to the J Chain



The PD-L1 IgM antibody with and without IL-15 fused to the J chain was incubated at increasing concentrations with human peripheral blood mononuclear cells in vitro and the proliferation of CD8+ effector T cell and NK cells was evaluated after three to four days. Shown is a representative study from >10 repeat studies.

Table of Contents

Index to Financial Statements

Third-Party Agreements

We have entered into agreements pursuant to which we are evaluating antibody sequences from third parties. Under these agreements, we are able to research and initially develop some of our discovery programs and are required to make certain annual payments. These payments are not expected to exceed $500,000 in the aggregate in 2019. We also have the option to negotiate or enter into commercial license agreements with these third parties if we elect to continue development or commercialization of any product candidates resulting from these agreements. If we exercise our option to negotiate or enter into any commercial licenses with these third parties, we will be subject to additional payment obligations upon achievement of certain development, regulatory, commercialization and other milestones and low single digit royalty payments on product sales.

Manufacturing and Supply

We do not currently operate a current good manufacturing practice (cGMP) manufacturing facility. We rely, and expect to continue to rely for some time, on third parties for the manufacture of our product candidates for preclinical and clinical testing. We also rely, and expect to continue to rely, on third parties to package, label, store and distribute our investigational product candidates.

We have spent significant resources developing our current manufacturing processes and know-how to produce sufficient yields and optimize functionality in conjunction with our contract manufacturing partners. Typically, we use Chinese hamster ovary (CHO) cells to produce IgM and bispecific IgM antibodies by transfecting those cells with plasmid genes for heavy chain (HC), light chain (LC) and J chain (JC) domains. To construct a bispecific IgM we use a modified JC plasmid gene that includes a single chain fragment variable (scFv) domain. The IgM pentamers, containing HC, LC and JC in an appropriate ratio (10:10:1), are assembled within the CHO cells, and secreted into the cell supernatant, all of which are contained in a large single-use bioreactor. The product IgM is harvested and purified to homogeneity using methods and processes developed by us. Our processes provide for cost-effective purification and formulation stability in the manufacturing of IgM antibodies.

We are in the process of designing and building a cGMP manufacturing facility expected to be adequate for the manufacture of clinical trial drug materials. Once this facility becomes operational, we expect to manufacture future clinical product candidates primarily using our facility. We expect to continue to manufacture clinical materials for our first two product candidates, IGM-2323 and our DR5 IgM antibody, at outside partners for some extended period of time.

Subject to the clinical trial success of our product candidates, we plan to design and build a commercial manufacturing facility for the future commercial manufacturing of some or all of our commercial products.

To date, we have obtained bulk drug substance (BDS) for IGM-2323 from a single-source third-party contract manufacturer. While any reduction or halt in supply of BDS from this contract manufacturer could limit our ability to develop our product candidates until a replacement contract manufacturer is found and qualified, we believe that we have sufficient BDS to support our current clinical trial programs. Filling and finishing of the BDS for IGM-2323 has been completed at another third-party contract manufacturer.

We also expect to obtain BDS for our DR5 IgM antibody from a single-source third-party contract manufacturer, and we expect that filling and finishing of the BDS for our DR5 IgM antibody will be completed at a third-party contract manufacturer.

All of our product candidates are manufactured from of a master cell bank of that antibody’s production cell line. We have or intend to have one master cell bank for each product candidate that was or will be produced and tested in accordance with cGMP and applicable regulations. Each master cell bank is or will be stored in two independent locations, and we intend to produce working cell banks for each product candidate later in product development. It is possible that we could lose multiple cell banks from multiple locations and have our manufacturing severely impacted by the need to replace the cell banks. However, we believe we have adequate backup should any particular cell bank be lost in a catastrophic event.

Table of Contents

Index to Financial Statements

Competition

The pharmaceutical and biotechnology industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary products. We face potential competition from many different sources, including major multinational pharmaceutical companies, established biotechnology companies, speciality pharmaceutical companies, universities, academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for the research, development, manufacturing and commercialization of cancer immunotherapies. Any product candidates that we successfully develop and commercialize will compete with new immunotherapies and other drug products that may become available in the future.

We compete in the segments of the pharmaceutical, biotechnology and other related markets that develop cancer treatments. There are many other companies that have commercialized and/or are developing immuno-oncology treatments for cancer, including large pharmaceutical and biotechnology companies, such as AbbVie, Amgen, AstraZeneca/MedImmune, Bristol-Myers Squibb, Merck, Novartis, Pfizer and Roche/Genentech.

We face significant competition from pharmaceutical and biotechnology companies that target specific tumor-associated antigens using immune cells or other cytotoxic modalities. These generally include immune cell redirecting therapeutics (*e.g.*, T cell engagers), adoptive cellular therapies (*e.g.*, CAR-T), antibody drug conjugates, targeted radiopharmaceuticals, targeted immunotoxin and targeted cancer vaccines.

With respect to our lead product candidate, IGM-2323, we are aware of other companies with competing clinical stage therapeutics that target CD20, which include, but are not limited to, Roche/Genentech, Regeneron, Xencor and Genmab.

With respect to our second product candidate, our DR5 IgM antibody, we are aware of other companies with competing clinical stage therapeutics that target DR5, which include, but are not limited to, AbbVie, InhibRx, Genmab and Boehringer Ingelheim.

Many of the companies against which we are competing or against which we may compete in the future have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved drugs than we do. Mergers and acquisitions in the pharmaceutical, biotechnology and diagnostic 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 large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and enrolling subjects for our clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

We could see a reduction or elimination of our commercial opportunity 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 or our collaborators may develop. Our competitors also may obtain FDA or foreign regulatory approval for their products more rapidly than we may obtain approval for product candidates, which could result in our competitors establishing a strong market position before we or our collaborators are able to enter the market. The key competitive factors affecting the success of all our product candidates, if approved, are likely to be their efficacy, safety, convenience, price, the effectiveness of companion diagnostics, if required, the level of biosimilar or generic competition and the availability of reimbursement from government and other third-party payors.

Intellectual Property

The proprietary nature and protection of our platforms, product candidates and discovery programs, as well as our processes and know-how, are important to our business. We have sought patent protection in the United States and internationally for our platform technologies, research discoveries and product candidates. For our product candidates, we seek to pursue patent protection covering compositions of matter, methods of use including various treatment indications and methods of creation and manufacture. Throughout the innovation process, and continuing into the product development process, we also plan to seek to identify additional means of obtaining patent

protection that would potentially enhance our commercial success, including obtaining patent protection for additional methods of use, such as additional medical indications, for our product candidates, treatment methods for specific patient populations using our product candidates and methods and tests to identify those patient populations, and the manufacture of our product candidates. We also seek to obtain patent protection for refinements and enhancements to our platform technologies. Our policy is to pursue, maintain and defend patent rights in strategic areas and to protect the technology, inventions, and improvements that are commercially important to the development of our business. We may also rely on trade secrets that may be important to the development of our business, and we may seek to protect and 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.

To date, we have spent considerable effort securing intellectual property rights, including rights related to our platform technology and product candidates. Our patent portfolios covering our platform technology, product candidates, and related discovery programs, are summarized below.

Proprietary Technologies

As of August 31, 2019, our patent portfolio related to our proprietary technologies includes nine patent families directed to our multivalent antibody platform, and includes issued U.S. and European patents directed to our modified J chain technology. The platform portfolio includes three granted patents, two allowed applications, 45 pending applications in active prosecution in 15 countries or regions, two pending Patent Cooperation Treaty (PCT) applications, and two pending unpublished provisional applications. These patent families are projected to expire between 2034 and 2040, absent any patent term adjustments or extensions. We wholly own the rights to these patent families. Summaries of relevant published patent families are provided below.

The “Modified J Chain” family includes disclosure and claims related to IgM, IgA, and hybrid multimeric antibodies that include a J chain, where the J chain has been modified to include a binding moiety, *e.g.*, an antibody or antibody fragment, or any other protein or non-protein moiety that can bind to a cognate binding partner (including antibody drug conjugates). The application family also includes disclosure and claims related to methods of making and using multimeric antibody molecules comprising a modified J chain, *e.g.*, bispecific IgM antibodies. This patent family has a projected expiration date of April 2, 2035, absent any patent term adjustments or extensions. The Modified J Chain patent family includes granted patents in the United States and Europe (validated in Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, Great Britain, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Sweden, and Slovenia). A second U.S. patent is allowed and will grant on September 3, 2019, and a Mexican application is allowed. As of August 31, 2019, the patent family also includes pending patent applications in the United States (one application), Australia, Brazil, Canada, China, Europe, Hong Kong (registered through the European Patent Office), India, Israel, Japan, South Korea, Mexico, New Zealand, Russia, Singapore, and South Africa. The granted U.S. and European claims are directed to IgM antibodies (in the United States) and IgM, IgA and hybrid antibodies (in Europe, also in the allowed U.S. application) comprising a modified J chain with a binding moiety fused or chemically conjugated to selected regions of the J chain. The allowed claims in Mexico are similar to the granted European claims. Related claims are being prosecuted in the pending applications.

Two later-filed patent families are related to our “Modified J Chain” family. These two patent families both have a projected expiration date of September 30, 2036, absent any patent term adjustments or extensions. Patent applications in the first of these two families includes disclosure and claims related to multimeric antibodies (*e.g.*, IgM, IgA, or hybrid multimeric antibodies) that include a modified J chain, where the modified J chain includes a binding moiety that modulates a T cell inhibitory pathway, *e.g.*, CTLA4, PD-1, TIM3, LAG3, BTLA, VISTA and TIGIT. Patent applications in this family are pending in the United States, China, Europe, and Japan. Patent applications in the second of these two families includes disclosure and claims related to multimeric antibodies (*e.g.*, IgM, IgA or hybrid multimeric antibodies) that include a modified J chain, where the modified J chain includes a moiety that affects adsorption, distribution, metabolism, and/or excretion (ADME) of the multimeric antibody. Exemplary moiety types include, but are not limited to, proteins that increase antibody serum half-life, proteins that affect receptor-mediated transcytosis, and proteins that increase retention of the multimeric antibody in an extravascular space. Patent applications in this family are pending in the United States, Australia, Canada, China, Europe, Hong Kong (registered through the European Patent Office), and Japan.

Table of Contents

Index to Financial Statements

We also own an international patent application, filed under the Patent Cooperation Treaty (PCT) that includes disclosure and claims related to J chain and IgM Fc mutations that inhibit binding of IgM to certain multimeric Ig receptors including the Fcαμ receptor, the Fcμ receptor, and the polymeric Ig receptor. The claims are related to IgM and IgM-derived antibodies that include these mutations, and have substantially increased serum half-lives relative to wild type IgM antibodies. This patent application has a projected expiration date of March 1, 2039, absent any patent term adjustments or extensions. The application is in the international PCT stage and will enter national stage prosecution on or before September 1 or October 1, 2020, depending on the jurisdiction.

Our platform technology portfolio also includes an international patent application, filed under the PCT that includes disclosure and claims related to IgM antibody Fc modifications that affect the ability of the IgM antibody to trigger CDC. The patent application discloses and claims single and combined human IgM Fc amino acid substitutions that reduce and/or completely inhibit IgM's typical CDC activity. This application has a projected expiration date of April 6, 2038, absent any patent term adjustments or extensions. The application is in the international PCT stage and will enter national stage prosecution on or before October 7 or November 7, 2019, depending on the jurisdiction.

We also own two patent families that include disclosure and claims related to multispecific IgM and IgA antibodies, respectively, where the multispecificity of the assembled IgM or IgA binding domains is created through knobs into holes or salt bridge modifications of the IgM or IgA heavy chain constant regions. The multispecific IgM patent family is titled "Constant Chain Modified Bispecific, Penta- and Hexavalent IgM Antibodies," and is projected to expire on September 4, 2034, absent any patent term adjustments or extensions. This family includes a granted U.S. patent, with claims related to bispecific IgM antibodies with specific heavy and light chain mutations to facilitate formation of bispecific binding regions. Related patent applications are pending in Australia, Brazil, Canada, China, Europe, India, Japan, and South Korea. The multispecific IgA patent family is titled "IgA Multi-specific Binding Molecules," and is projected to expire on February 10, 2035, absent any patent term adjustments or extensions. Patent applications in this patent family are pending in the United States, Australia, Brazil, Canada, China, Europe, Hong Kong (registered through the European Patent Office), India, Japan, and South Korea.

Product Candidates and Discovery Pipeline

Our product candidates and discovery pipeline patent portfolio includes 13 patent families with claims directed to our product candidates. These include one patent family with claims directed to IGM-2323 and two patent families with claims directed to our DR5 IgM antibody. Our product portfolio also includes a granted U.S. patent with claims directed to IgM antibody superagonists specific for TNFrSF targets. As of June 30, 2019, our product portfolio includes one granted patent, 82 applications in active prosecution in 14 countries or regions, one pending PCT application and five unpublished pending U.S. provisional applications. These patent families are projected to expire between 2036 and 2040, absent any patent term adjustments or extensions. We wholly own the rights to these patent families. Summaries of published patent families relevant to our product candidates and our discovery pipeline are provided below.

The patent family directed to IGM-2323 has a projected expiration date of March 4, 2036, absent any patent term adjustments or extensions. This patent family includes claims directed to multimeric antibodies, *e.g.*, IgM and IgA antibodies, that include the IGM-2323 antigen binding domains and methods of treating cancer patients with such antibodies. This patent family further discloses antibodies that include a modified J chain, where the modified J chain includes an antigen-binding domain specific for CD3-epsilon. This patent family, in combination with the "Modified J Chain" application family discussed above, includes claims directed to the IGM-2323 composition, as well as methods of making and using the same. Patent applications in this family are pending in the United States, Australia, Brazil, Canada, China, Europe, India, Israel, Japan, South Korea, New Zealand, Singapore, and Hong Kong (registered through the European Patent Office).

Our patent portfolio also includes six patent families owned by us directed to our TNFrSF superagonist technology and product candidates. The first patent family includes disclosure and claims directed to multimeric superagonist antibodies that bind to any TNFrSF target. This family also includes disclosure and claims directed multimeric superagonist antibodies that bind to DR5 that relate to our DR5 IgM antibody product candidate. The application, which we own, has a projected expiration date of January 20, 2036, absent any patent term adjustments or extensions, and includes a U.S. patent that has granted, which is generically directed to IgM-based TNFrSF superagonists and their use in treating cancer patients. In addition, claims directed to DR5-targeted multimeric superagonists and specifically our DR5 IgM antibody are pending in the United States. The patent family is also

Table of Contents

Index to Financial Statements

pending in Australia, Canada, China, Europe, Hong Kong (registered through the European Patent Office), India, Israel, Japan, South Korea, New Zealand, Singapore, with claims relating broadly to TNFrSF superagonists and also to DR5 superagonists.

Four patent families are each directed to a specific TNFrSF target, OX40, GITR, CD137/4-1BB, and CD40, respectively, and have projected expiration dates of either July 19, 2037 or July 20, 2037, absent any patent term adjustments or extensions. The OX40 family has a projected expiration date of July 20, 2037, absent any patent term adjustments or extensions, and includes claims directed to a variety of different multimeric OX40 superagonist antibodies and their use for treating cancer patients. Patent applications in this family are pending in the United States, Australia, Canada, China, Europe India, Israel, Japan, Mexico, and New Zealand. The GITR family has a projected expiration date of July 20, 2037, absent any patent term adjustments or extensions, and includes claims directed to a variety of different multimeric GITR superagonist antibodies and their use for treating cancer patients. Patent applications in this family are pending in the United States, Australia, Canada, China, Europe India, Israel, Japan, Mexico, and New Zealand. The CD137/4-1BB family has a projected expiration date of July 19, 2037, absent any patent term adjustments or extensions, and includes claims directed to a variety of different multimeric CD137/4-1BB superagonist antibodies and their use for treating cancer patients. Patent applications in this family are pending in the United States, Australia, Canada, and Europe. The CD40 family has a projected expiration date of July 19, 2037, absent any patent term adjustments or extensions, and includes claims directed to a variety of different multimeric CD40 superagonist antibodies and their use for treating cancer patients. Patent applications in this family are pending in the United States, Australia, Canada, and Europe.

Our patent portfolio also includes an international PCT application directed to combination cancer therapies that include a DR5 superagonist antibody, *e.g.*, our DR5 IgM antibody, in combination with a chemotherapeutic agent, *e.g.*, irinotecan, gemcitabine, or venetoclax. This application has a projected expiration date of February 25, 2039, absent any patent term adjustments or extensions. The application is in the international PCT stage and will enter national stage prosecution on or before August 26 or September 26, 2020, depending on the jurisdiction.

As part of our research pipeline, our patent portfolio also includes a patent family related to the identification and characterization of novel PD-L1 antibodies. This application family, titled “Anti-PD-L1 Antibodies,” has a projected expiration date of May 9, 2037, absent any patent term adjustments or extensions. Patent applications in this family are pending in the United States, Australia, Canada, China, Europe, Hong Kong (registered through the European Patent Office), India, Israel, Japan, South Korea, New Zealand, and Singapore.

Our commercial success will depend in part on obtaining and maintaining patent protection and trade secret protection of our current and future product candidates and the methods used to develop and manufacture them, as well as successfully defending these patents against any third-party challenges. Our ability to stop third parties from making, using, selling, offering to sell or importing our product candidates depends on the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities. We cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our product candidates, discovery programs and processes.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In most countries in which we file, the patent term is 20 years from the earliest date of filing a non-provisional patent application. In the United States, the patent term of a patent that covers an FDA-approved drug may also be eligible for patent term extension, which permits patent term restoration as compensation for the patent term lost during the FDA regulatory review process. The Hatch-Waxman Amendments permit a patent term extension of up to five years beyond the expiration of the patent, insofar as the patent covers the FDA-approved product. The length of the patent term extension is related to the length of time the drug is under regulatory review. Patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, only one patent applicable to an approved drug may be extended and only those claims covering the approved drug, a method for using it or a method for manufacturing it may be extended. Similar provisions are available in foreign jurisdictions to extend the term of a patent that covers an approved drug. In the future, if and when our product candidates receive FDA approval, we expect to apply for patent term extensions on patents covering those products. While we plan to seek patent term extensions on any of our issued patents in any

jurisdiction where these are available, there is no guarantee that the applicable authorities, including the FDA in the United States, will agree with our assessment of whether such extensions should be granted and, if granted, the length of such extensions.

In addition to patent protection, we also rely on trademark registration, trade secrets, know how, other proprietary information and continuing technological innovation to develop and maintain our competitive position. We seek to protect and 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. Although we take steps to protect our proprietary information and trade secrets, including through contractual means with our employees and consultants, third parties may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets or disclose our technology. We may therefore not be able to meaningfully protect our trade secrets. It is our policy to require our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors to execute confidentiality agreements upon the commencement of employment or consulting relationships with us. 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 is to be kept confidential and not disclosed to third parties except in specified circumstances. Our agreements with employees also provide that all inventions conceived by the employee in the course of employment with us or from the employee's use of our confidential information are our exclusive property. However, such confidentiality agreements and invention assignment agreements can be breached and we may not have adequate remedies for any such breach.

The patent positions of biotechnology companies like ours are generally uncertain and involve complex legal, scientific and factual questions. Our commercial success will also depend in part on not infringing upon the proprietary rights of third parties. It is uncertain whether the issuance of any third-party patent would require us to alter our development, commercial strategies, drugs or processes, or to obtain licenses or cease certain activities. Our breach of any license agreements or our failure to obtain a license to proprietary rights required to develop or commercialize our future products 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 derivation proceedings in the USPTO to determine priority of invention.

For more information on these risks and other comprehensive risks related to our intellectual property, see the section titled "Risk Factors—Risks Related to Our 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.

U.S. Biologics Regulation

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 (GLP) regulation;
- 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 (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;

Table of Contents

Index to Financial Statements

- preparation of and submission to the FDA of a Biologics License Application (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 cGMPs 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 (GCPs); and
- FDA review and approval of a 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 or protocols for preclinical studies and clinical trials. 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 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.

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 preclinical studies and clinical trials 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, to identify possible 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.

Table of Contents

Index to Financial Statements

? *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 studies and clinical trials, 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 the 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 GCPs. 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.

Table of Contents

Index to Financial Statements

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 (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 post-market 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 patients with 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 patients with 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, alone or in combination with one or more other drugs or biologics, 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. For original BLAs, 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 (as compared to ten months under standard review).

Additionally, products studied for their safety and effectiveness in treating patients with 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.

Table of Contents

Index to Financial Statements

Fast track designation, breakthrough therapy designation, priority review and RMAT designation do not change the standards for approval but may expedite the development or approval process. Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat patients with 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 or if the FDA finds that the holder of the orphan drug exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated. Orphan drug exclusivity does not prevent the 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 the 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 cGMPs, 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 cGMPs 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 cGMPs 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;
- consent decrees, corporate integrity agreements, debarment or exclusion from federal healthcare programs;
- mandated modification of promotional materials and labeling and the issuance of corrective information;
- the issuance of safety alerts, Dear Healthcare Provider letters, press releases and other communications containing warnings or other safety information about the product; 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 (ACA) includes a subtitle called the 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, 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 are 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 federal Anti-Kickback Statute, the federal False Claims Act, the Health Insurance Portability and Accountability Act (HIPAA) and similar foreign, federal and state fraud and abuse, transparency and privacy laws.

The federal Anti-Kickback Statute 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. The term remuneration has been interpreted broadly to include anything of value, including stock options. The federal Anti-Kickback Statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on one hand and prescribers, purchasers and formulary managers, among others, on the other. There are a number of statutory exceptions and regulatory safe harbors protecting some common activities from prosecution, but they are drawn narrowly and practices that involve remuneration, such as consulting agreements, that may be alleged to be intended to induce prescribing, purchasing or recommending may be subject to scrutiny if they do not qualify for an exception or safe harbor. Failure to meet all of the requirements of a particular applicable statutory exception or regulatory safe harbor does not make the conduct per se illegal under the federal Anti-Kickback Statute. Instead, the legality of the arrangement will be evaluated on a case-by-case basis based on a cumulative review of all of its facts and circumstances. Our practices may not in all cases meet all of the criteria for protection under a statutory exception or regulatory safe harbor. 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. In addition, a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act.

Civil and criminal false claims laws, including the federal False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalty laws, which can be enforced through civil whistleblower or qui tam actions, 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. For example, the federal False Claims Act prohibits any person or entity from knowingly presenting, or causing to be presented, a false claim for payment to the federal government or knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government. A claim includes “any request or demand” for money or property presented to the U.S. government. Several pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product.

HIPAA created additional federal criminal statutes that prohibit, among other things, executing a scheme to defraud any healthcare benefit program, including private third-party payors, and making false statements relating to healthcare matters. In addition, HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act (HITECH), and their implementing regulations, impose certain requirements on HIPAA covered entities, which include certain healthcare providers, healthcare clearing houses and health plans, and individuals and entities that provide services on their behalf that involves individually identifiable health information, known as business associates, relating to the privacy, security and transmission of individually identifiable health information.

The U.S. federal Physician Payments Sunshine Act 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 Center for Medicare & Medicaid Services (CMS) 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.

Table of Contents

Index to Financial Statements

We are also subject to additional similar 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 our operations are found to be in violation of any of such laws or any other governmental regulations that apply, we may be subject to penalties, including, without limitation, significant 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, 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, if approved, 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, if any, for such product by third-party payors. Decisions regarding whether to cover any of our product candidates, if approved, the extent of coverage and amount of reimbursement to be provided are made on a plan-by-plan basis. Further, no uniform policy for coverage and reimbursement exists in the United States, and coverage and reimbursement can differ significantly from payor to payor. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement rates, but also have their own methods and approval process apart from Medicare determinations. As a result, the coverage determination process is often a time-consuming and costly process that will 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.

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 that receives approval. Decreases in third-party reimbursement for any product or a decision by a third-party 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.

The ACA, which was enacted in March 2010, 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, a new licensure framework for follow on biologic products, 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 of 2017 (Tax Act) was enacted, which, among other things, removes penalties for not complying with ACA's individual mandate to carry health insurance, effective January 1, 2019. On December 14, 2018, the Texas District Court Judge ruled that the individual mandate is a critical and inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. While the Texas District Court Judge, as well as the Trump administration and CMS, have stated that the ruling will have no immediate effect, and on December 30, 2018 the Texas District Court Judge issued an order staying the judgment pending appeal, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA. Since the enactment of the Tax Act, there have been additional amendments to certain provisions of the ACA, and the Trump administration and Congress may continue to seek to modify, repeal, or otherwise invalidate all, or certain other provisions of, the ACA.

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. 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.

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" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase 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 U.S. Department of Health and Human Services has solicited feedback on certain of these measures and, additionally, is immediately implementing others under its existing authority. For example, in September 2018, CMS announced that it will allow Medicare Advantage Plans the option to use step therapy for Part B drugs beginning January 1, 2019. Additionally, CMS issued a final rule, effective on July 9, 2019, that requires direct-to-consumer television advertisements of prescription drugs and biological products, for which payment is available through or under Medicare or Medicaid, to include in the advertisement the Wholesale Acquisition Cost, or list price, of that drug or biological product if it is equal to or greater than $35 for a monthly supply or usual course of treatment. Prescription drugs and biological products that are in violation of these requirements will be included on a public list. 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.

Additionally, the Right to Try Act, which was enacted on May 30, 2018, provides a federal framework for certain patients with life-threatening diseases to access certain investigational new drug products that have completed a Phase 1 clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a drug manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act.

Table of Contents

Index to Financial Statements

Employees

As of August 31, 2019, we had 51 employees, 50 of whom are full-time employees and 40 of whom were engaged in research and development activities. 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.

Property

We currently lease approximately 34,000 square feet of office, laboratory and manufacturing space in Mountain View, California under a lease that expires in May 2025. We believe this space is sufficient to meet our near-term needs and that any additional space we may require will be available on commercially reasonable terms.

Legal Proceedings

From time to time, we may become involved in legal proceedings arising in the ordinary course of our business. We are not currently a party to any material legal proceedings. Regardless of outcome, litigation can have an adverse impact on us due to defense and settlement costs, diversion of management resources, negative publicity, reputational harm and other factors.

MANAGEMENT

Executive Officers, Key Employees and Directors

The following table sets forth certain information regarding our executive officers, key employees and directors as of August 31, 2019:

NAME	AGE	POSITION(S)
Executive Officers:		
Fred Schwarzer	67	Chief Executive Officer, President and Director
Daniel Chen, M.D., Ph.D.	50	Chief Medical Officer
Bruce Keyt, Ph.D.	66	Chief Scientific Officer
Misbah Tahir	44	Chief Financial Officer
Key Employees:		
Ramesh Baliga, Ph.D.	51	Vice President, Discovery Biology
Stephen Carroll, Ph.D.	68	Vice President, Preclinical Sciences
Wayne Godfrey, M.D.	59	Vice President, Clinical Development
Elizabeth Haanes, Ph.D.	62	Vice President, Intellectual Property
Marvin Peterson, Ph.D.	54	Vice President, Process Sciences and Manufacturing
Angus Sinclair, Ph.D.	52	Vice President, Immuno-Oncology
Suzette Tauber	56	Vice President, Human Resources
Non-Employee Directors:		
Michael Loberg, Ph.D.(1)(2)(3)(4)	72	Chair
M. Kathleen Behrens, Ph.D.(1)(2)(3)	66	Director
Julie Hambleton, M.D.(1)(4)	61	Director
Michael Lee.	40	Director
Kelvin Neu, M.D.(4)	45	Director
William Strohl, Ph.D.(4)	67	Director
Christina Teng Topsøe(2)(3)	38	Director
Jakob Haldor Topsøe	50	Director

(1) Member of our audit committee
(2) Member of our compensation committee
(3) Member of our corporate governance and nominating committee
(4) Member of our research and clinical development committee

Executive Officers

Fred Schwarzer has served as our Chief Executive Officer since July 2010 and has been a member of our board of directors since February 2003, serving as Chairman until August 2018. Mr. Schwarzer has also served as our President since December 2018, and previously served as Chief Executive Officer and President at different times between December 1999 and May 2003. Mr. Schwarzer was a founder of Charter Life Sciences, a venture capital firm specializing in life sciences investments, in 2003 and served as its Managing Partner from inception until August 2019. Mr. Schwarzer previously served as Chair of the board of directors of Inviragen, a biopharmaceutical company and developer of the DENVax dengue vaccine, from 2009 until Inviragen's acquisition by Takeda Pharmaceutical Company in 2013. He also served as Chief Executive Officer and Chairman of the board of directors of Heska Corporation, a biotechnology company focused primarily on the animal healthcare markets, from 1994 to 1998 and 1999 to 2001, respectively. Mr. Schwarzer received a B.A. in Pre-Legal Studies from the University of Michigan and a J.D. from the University of California, Berkeley, School of Law.

We believe Mr. Schwarzer is qualified to serve on our board of directors because of his expertise and experience as our Chief Executive Officer and President, his depth and expertise in the life sciences and venture capital industries, his leadership experience and his educational background.

Table of Contents

Index to Financial Statements

Daniel Chen, M.D., Ph.D. has served as our Chief Medical Officer since August 2018. Prior to joining us, Dr. Chen served in various positions at Roche/Genentech, a biopharmaceutical company, starting in 2006, including most recently as Vice President, Global Head of Cancer Immunotherapy from May 2016 to July 2018. While at Roche/ Genentech, Dr. Chen also served as Cancer Immunotherapy Franchise Head, Product Development from 2014 to 2018 and led the development of Tecentriq from entry into first in human studies to multiple global registration approvals. Dr. Chen has also served on the board of directors of the Society for Immunotherapy of Cancer since July 2018 and is currently co-chair of the Cancer Immunotherapy Committee, an arm of the Cancer Research Institute. Dr. Chen received a B.S. in Life Sciences from the Massachusetts Institute of Technology and an M.D. and Ph.D. from the University of Southern California, Keck School of Medicine and Microbiology. He completed his residency in internal medicine, a fellowship in Medical Oncology and a Post-doctorate in Immunology at Stanford University. Dr. Chen also ran the metastatic melanoma clinic at the Stanford Cancer Center from 2003 to 2006, where he cared for melanoma patients and studied human immune responses to cancer vaccination and cytokine administration, until 2016.

Bruce Keyt, Ph.D. has served as our Chief Scientific Officer since August 2012 and previously served as a consultant for us beginning in August 2010. Prior to joining us, Dr. Keyt served as Chief Technology Officer at Trellis Bioscience, an antibody discovery company, from August 2007 to February 2010. Earlier in his career, he served as Head of Research between 2005 and 2006 at Abmaxis, a biotechnology company, which was acquired by Merck. He was the Vice President of Preclinical Development at Abgenix, a biotechnology company, from 2001 through the acquisition of Abgenix by Amgen in 2005. Dr. Keyt was the Director of Pharmacology at Millennium Pharmaceuticals from 1998 to 2001. From 1982 to 1998, he served in research and development roles at Roche/Genentech as a Scientist and Senior Scientist, where he made significant contributions to the discovery and development of Avastin, Lucentis, Activase tPA, TNKase-tPA and Kogenate. Dr. Keyt received a B.A. in Chemistry from Washington University in St. Louis and a Ph.D. in Biochemistry from Tufts University School of Medicine.

Misbah Tahir has served as our Chief Financial Officer since January 2019. Prior to joining us, Mr. Tahir worked at Dermira, a biotechnology company, where he served as Vice President, Head of Finance from March 2016 to December 2018, Senior Director, Head of Finance from January 2015 to March 2016, and Senior Director, Finance from January 2014 to December 2014. Prior to joining Dermira, he held finance leadership positions at various biotechnology companies, including Onyx Pharmaceuticals, Human Genome Sciences and Amgen. Mr. Tahir began his career as a management consultant at the consulting firm of Oliver Wyman, formerly Mercer Management Consulting. He received a B.A. in International Relations from the University of Pennsylvania and an M.B.A. from the University of Michigan Business School. Mr. Tahir is a certified public accountant, inactive, in the state of California.

Key Employees

Ramesh Baliga, Ph.D. has served as our Vice President, Discovery Biology since November 2014. Prior to joining us, Dr. Baliga founded Extend Biopharma, a biopharmaceutical company, in November 2012 and served as Chief Science Officer until November 2014. He previously held scientific and leadership positions at Sutro Biopharma, a clinical stage biotechnology company, Catalyst Biosciences, a biopharmaceutical company, and Cytokinetics, a biopharmaceutical company. Dr. Baliga received an M.Sc. in Chemistry from the Indian Institute of Technology and a Ph.D. in Chemistry from the California Institute of Technology. He completed his post doctorate at Yale University in Biophysics.

Stephen Carroll, Ph.D. has served as our Vice President, Preclinical Sciences since September 2015. Prior to joining us, Dr. Carroll founded Altair BioConsulting, a biotechnology consulting firm, in December 2003 and served as its President until August 2015, and through which he also served as a consultant to us from May 2013 to August 2015. Dr. Carroll also previously served in various positions at XOMA, a biotechnology company, including most recently as Vice President, Scientific and Product Development from 2002 to 2003. He received a B.A. in Biology from the University of California, San Diego, and a Ph.D. in Microbiology from the University of California, Los Angeles. Dr. Carroll completed his post doctorate in Microbiology at the University of California, Los Angeles, and was an Assistant Professor in the Department of Microbiology and Molecular Genetics at Harvard Medical School.

Table of Contents

Index to Financial Statements

Wayne Godfrey, M.D. has served as our Vice President, Clinical Development since November 2018. Prior to joining us, Dr. Godfrey served as Senior Director, Clinical Development at Kite Pharma, a biotechnology company and a subsidiary of Gilead, from July 2017 to November 2018 where he made significant contributions to the development of Yescarta, as Principal at ImmTak Consulting, an oncology consulting firm for clinical development, from July 2015 to June 2017, as Chief Medical Officer at Etubics, a biopharmaceutical company, from December 2015 to December 2016, as Senior Director, Clinical Research Oncology at Gilead, from January 2012 to April 2015, where he contributed to the filing and FDA approval of Zydelig. He also previously served as a life sciences consultant from May 2015 to June 2015 and as Chief Medical Officer and Vice President, Clinical Development at Bavarian Nordic, a research-based biopharmaceutical company, from 2007 to 2012. He received a B.A. in Biochemistry and Molecular Biology from the University of California, Santa Barbara, an M.S. in Biological Sciences from Stanford University and an M.D. from Washington University School of Medicine in St. Louis. Dr. Godfrey completed his internal medicine residency and a hematology fellowship at Stanford University School of Medicine.

Elizabeth Haanes, Ph.D. has served as our Vice President, Intellectual Property since August 2019. Prior to joining us, Dr. Haanes served as a Partner in the intellectual property group of FisherBroyles, LLP, a law firm, from March 2018 to August 2019, and as a Partner in the intellectual property group of Thompson Coburn LLP, a law firm, from January 2014 to March 2018. Dr. Haanes received a B.S. in Biology from the University of Michigan, a Ph.D. in Microbiology from the University of Minnesota and a J.D. from the University of Colorado.

Marvin Peterson, Ph.D. has served as our Vice President, Process Sciences and Manufacturing since November 2017. Prior to joining us, Dr. Peterson served as Senior Director, Manufacturing at MabVax Therapeutics, a biotechnology company, from July 2015 to November 2017 and as Senior Director, Upstream Process Development and Manufacturing at Ambrx, a biotechnology company, from April 2014 to July 2015. He also previously served in manufacturing, scientific and leadership positions at multiple biotechnology companies, including Bristol-Myers Squibb, Eli Lilly, Celgene and Shire. He received a B.S. in Chemical Engineering from the University of Colorado, Boulder and a Ph.D. in Chemical Engineering from Purdue University. Dr. Peterson completed his post doctorate at the University of Minnesota, BioProcess Technology Institute.

Angus Sinclair, Ph.D. has served as our Vice President, Immuno-Oncology since February 2018. Prior to joining us, Dr. Sinclair served as Senior Director, Oncology Research at Northern Biologics, a biotechnology company, from February 2015 to January 2018. He also previously served in various positions at Amgen, a biopharmaceutical company, including most recently as Scientific Director, Oncology Research from January 2011 to February 2015. Dr. Sinclair performed post-doctoral research at the University of California, San Diego, the University of Cambridge, and an instructorship at the University of Texas Southwestern Medical Center, where he studied gene therapy and the genetic regulation of the developing innate and adaptive immune systems. Dr. Sinclair received a B.S. in Molecular Biology from the University of Edinburgh and a Ph.D. in Hematology/Molecular Biology from University College London.

Suzette Tauber has served as our Vice President, Human Resources since June 2019. Prior to joining us, Ms. Tauber served as Senior Director, Head of Human Resources at ARMO Biosciences, a biotechnology company, which was acquired by Eli Lilly, from November 2017 to April 2019, as a human resources consultant and member of the executive management team at Ravix Group, a consulting firm, from April 2012 to November 2017, and as a human resources consultant at Aeneas Consulting, a consulting firm, from February 2014 to September 2016. Ms. Tauber received a B.A. in Communications from Northern Arizona University.

Non-Employee Directors

Michael Loberg, Ph.D. has served as a member of our board of directors since September 2015, and as Chair of our board of directors since August 2018. Since January 2007, Dr. Loberg has served on the board of directors of ArQule, a biopharmaceutical company, and is also a member of its compensation, nominating and governance committee and science committee. Dr. Loberg previously served on the board of directors of Inotek Pharmaceuticals, a biopharmaceutical company, from March 2006 to July 2014 and as Interim Chief Executive Officer from 2007 to 2009. Previously, he served as Chief Executive Officer and a member of the Board of Directors of NitroMed, a pharmaceutical company, from September 1997 to March 2006 and as its President from September 2003 to March 2006. From 1979 to 1997, Dr. Loberg held a number of senior management positions at Bristol-Myers

Table of Contents

Index to Financial Statements

Squibb, including President of Bristol-Myers Squibb's Oncology and Immunology, U.S. Primary Care, Northern Europe, Specialty Pharmaceuticals and Squibb Diagnostics divisions, as well as Director and Vice President, E.R. Squibb & Sons Research and Development. Dr. Loberg received a B.S. in Chemistry from Trinity College and a Ph.D. in Chemistry from Washington University in St. Louis.

We believe Dr. Loberg is qualified to serve as Chair of our board of directors because of his extensive career in the pharmaceutical industry, leadership skills and life sciences public company experience.

M. Kathleen Behrens, Ph.D. has served as a member of our board of directors since January 2019. Since December 2009, Dr. Behrens has served as an independent life sciences consultant and investor. From January 2012 to June 2014, she served as the Co-Founder, President, Chief Executive Officer and director of the KEW Group, a private oncology services company. From 1996 to December 2009, Dr. Behrens served in various roles at RS Investments, an investment management and research firm, including as a General Partner for selected venture funds. Prior to this, from 1983 to 1996, she served as a General Partner and Managing Director at Robertson Stephens & Co. Since March 2009, Dr. Behrens has served as a member of the board of directors of Sarepta Therapeutics, a medical research and drug development company, and as Chairwoman since April 2015, as well as chair of its audit committee and a member of its research and development committee. She was elected to the board of MiMedx Group, a wound care company, in June, 2019, at which time she was named Chairwoman and became a member of the compliance and ethics committee. Dr. Behrens served on the board of directors of Amylin Pharmaceuticals, a biopharmaceutical company, from June 2009 until its sale to Bristol-Myers Squibb in 2012. She previously served as a member of the President's Council of Advisors on Science and Technology (PCAST) from 2001 to early 2009 and as Chairwoman of its subcommittee on Personalized Medicine. She has also spent time as a public-market biotechnology securities analyst and a venture capitalist focusing on healthcare, technology and related investments. She also previously served on the Board on Science, Technology and Economic Policy for the National Research Council and as a Director, President and Chairwoman of the National Venture Capital Association. Dr. Behrens received a B.S. in Biological Sciences and a Ph.D. in Microbiology from the University of California, Davis.

We believe Dr. Behrens is qualified to serve on our board of directors because of her extensive experience in the life sciences field, her executive and board leadership experience and her medical expertise in biology and microbiology.

Julie Hambleton, M.D. has served as a member of our board of directors since August 2018. Since June 2018, Dr. Hambleton has served as Senior Vice President, Chief Medical Officer, Head of Development at IDEAYA Biosciences, an oncology medicine company. From September 2017 to May 2018 and from March 2016 to May 2016, Dr. Hambleton served as an independent strategic consultant for various life sciences companies. From May 2016 to September 2017, she served as Vice President, Head U.S. Medical at Bristol-Myers Squibb, a global biopharmaceutical company. From August 2015 to February 2016, Dr. Hambleton served as Executive Vice President, Chief Medical Officer at Five Prime Therapeutics, a biotechnology company, and as Senior Vice President, Chief Medical Officer from December 2012 to August 2015. From April 2010 to November 2012, Dr. Hambleton served as Vice President, Clinical Development at Clovis Oncology, and from 2003 to 2010, Dr. Hambleton held increasing roles of responsibility in BioOncology at Genentech. Dr. Hambleton completed her hematology-oncology training at the University of California, San Francisco, where she then served on the faculty from 1993 to 2003. Dr. Hambleton received a B.S. in Nursing from Duke University and an M.D. from Case Western Reserve University School of Medicine, and is board-certified in Hematology and Internal Medicine.

We believe Dr. Hambleton is qualified to serve on our board of directors because of her extensive career in the biotechnology industry, her executive and leadership experience and her medical expertise in hematology and internal medicine.

Michael Lee has served as a member of our board of directors since July 2019. Mr. Lee has served as Co-Founder and Portfolio Manager at Redmile Group, an investment advisory firm since 2007. Prior to Redmile Group, Mr. Lee worked as a biotechnology investor at Steeple Capital, an investment management firm, and as an analyst at Welch Capital Partners, an investment advisory firm, and Prudential Equity Group, a financial services company. Mr. Lee has served on the board of directors of Fate Therapeutics, a biopharmaceutical company, since July 2018. Mr. Lee holds a B.S. in Molecular and Cellular Biology from the University of Arizona.

We believe Mr. Lee is qualified to serve on our board of directors because of his background, knowledge of our industry and extensive investment and leadership experience.

Kelvin Neu, M.D. has served as a member of our board of directors since June 2019. Since April 2004, Dr. Neu has served as a Partner at Baker Bros. Advisors, an investment firm. Since March 2017, Dr. Neu has served on the board of directors of Aquinox Pharmaceuticals, a biopharmaceutical company, and is also on its nominating and corporate governance committee and science and technology committee. Dr. Neu previously served on the board of directors of Idera Pharmaceuticals, a biopharmaceutical company, from March 2014 to June 2019, and on the board of directors of XOMA Corporation, a biotechnology company, from July 2012 to May 2015. Dr. Neu earned a B.A. in Molecular Biology from Princeton University, where he was awarded the Khoury Prize for graduating first in his department of Molecular Biology, and an M.D. from the Harvard Medical School-MIT Health Sciences and Technology program, and an M.S. in Immunology from Stanford University as a Howard Hughes Medical Institute Fellow. Prior to attending Princeton, Dr. Neu served for two and a half years in the military of Singapore.

We believe Dr. Neu is qualified to serve on our board of directors because of his extensive investment and leadership experience, knowledge of our industry, and educational background in biology and biotechnology.

William Strohl, Ph.D. has served as a member of our board of directors since August 2018. In August 2016, Dr. Strohl founded BiStro Biotech Consulting, a biotechnology consulting company, of which he also serves as President. From February 2016 to August 2016, Dr. Strohl served as Vice President and Biologics Fellow at Janssen BioTherapeutics, the therapeutic biologics organization within the Janssen Research & Development division of Johnson & Johnson, a multinational medical devices and pharmaceutical company, and served as its Vice President and Head from October 2013 to February 2016. Prior to that, from April 2008 to October 2013, Dr. Strohl served as Head of Antibody Discovery at Janssen BioTherapeutics. Dr. Strohl has also held various roles at Merck, a pharmaceutical company, including leading Natural Products Biology and leading Biologics discovery efforts and was a Professor in the Department of Microbiology and the Program of Biochemistry at The Ohio State University. Dr. Strohl received a B.S. in Biology from Central Michigan University and a Ph.D. in Microbiology from Louisiana State University.

We believe Dr. Strohl is qualified to serve on our board of directors because of his extensive career in the biotechnology industry, his leadership experience and his educational background in biology, chemistry and microbiology.

Christina Teng Topsøe has served as a member of our board of directors since August 2018, and previously served as an observer on our board of directors beginning in 2013. Since March 2013, Ms. Topsøe has served on the board of directors of Haldor Topsøe, a Danish catalysis and chemical processing company, and has served on the board of directors of HTH, its holding company, since June 2015. Ms. Topsøe previously was a lawyer at Allen & Overy LLP and Simpson Thacher and Bartlett LLP. Ms. Topsøe pursued a B.A. in Chinese Studies from the University of Copenhagen, studied Chinese Language and Literature at Peking University, and received an LL.B. from the University of London and an M.B.A. from London Business School and Columbia Business School.

We believe Ms. Topsøe is qualified to serve on our board of directors because of her leadership experience and perspective as an entrepreneur and her affiliation with our lead investor.

Jakob Haldor Topsøe has served as a member of our board of directors since August 2018. Since June 2015, Mr. Topsøe has served as Chairman of the board of directors of HTH, and has served on the board of directors of Haldor Topsøe, its subsidiary, since October 2010 and as its Vice Chairman since August 2016. Since January 2009, Mr. Topsøe has served as Partner at AMBROX Capital, a Danish investment management firm, and as Associate Partner since September 2016. From 1996 to 2008, Mr. Topsøe was employed in various functions within Alfred Berg/ABN Amro Bank including Head of Equities, Denmark. Mr. Topsøe currently serves as a member of the board of directors of Motortramp, a Danish provider of marine transportation services, and Dampskibsselskabet Orients Fond, a Danish charitable foundation. Mr. Topsøe received a Graduate Diploma in Business Administration (Finance) from the Copenhagen Business School.

We believe Mr. Topsøe is qualified to serve on our board of directors because of his investment experience, leadership experience and background and his affiliation with our lead investor.

Table of Contents

Index to Financial Statements

Family Relationships

Christina Teng Topsøe and Jakob Haldor Topsøe, each a member of our board of directors, are first cousins. There are no other family relationships among any of our directors or executive officers.

Board Composition

Our business and affairs are managed under the direction of our board of directors, which currently consists of nine members.

Immediately prior to the completion of this offering, our directors will be divided among three classes with staggered three-year terms as follows:

- Class I, whose members will be Julie Hambleton, William Strohl and Jakob Haldor Topsøe. The terms of the Class I directors will expire at our 2020 annual meeting of stockholders;
- Class II, whose members will be M. Kathleen Behrens, Michael Loberg and Christina Teng Topsøe. The terms of the Class II directors will expire at our 2021 annual meeting of stockholders; and
- Class III, whose members will be Michael Lee, Kelvin Neu and Fred Schwarzer. The terms of the Class III directors will expire at our 2022 annual meeting of stockholders.

At each annual meeting of stockholders, upon the expiration of the term of a class of directors, the successor to each such director in the class will be elected to serve from the time of election and qualification until the third annual meeting following his or her election and until his or her successor is duly elected and qualified, in accordance with our amended and restated certificate of incorporation. We expect that 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 our control.

On June 28, 2019, we entered into nominating agreements (the Nominating Agreements) with each of (i) HTH, (ii) Baker Brothers Life Sciences L.P. and 667, L.P. (together, Baker Brothers) and (iii) Redmile Biopharma Investments II, L.P., RAF, L.P. and Redmile Strategic Master Fund, LP (together, Redmile) (each, an Investor) to provide certain rights with respect to their ability to designate members of our board of directors (the Investor Designees).

Pursuant to the Nominating Agreement entered into with HTH, during the period beginning at the completion of this offering until the earliest of: (i) the twelfth anniversary of the date of the completion of this offering; (ii) such time as HTH and its affiliates no longer beneficially own at least 1,134,919 shares of our capital stock; (iii) following the third year anniversary of the completion of this offering, (a) with respect to one of its two Investor Designees, such time as HTH holds less than 20% of our as-converted securities, and (b) with respect to both of its Investor Designees, such time as HTH holds less than 5% of our as-converted securities; or (iv) the consummation of a Deemed Liquidation (as defined in our amended and restated certificate of incorporation), we will have the obligation to support the nomination of, and to cause our board of directors to include in the slate of nominees recommended to our stockholders for election, two Investor Designees of HTH.

Pursuant to the Nominating Agreements entered into with each of Baker Brothers and Redmile, during the period beginning at the completion of this offering until the earliest of: (i) the twelfth anniversary of the date of the completion of this offering; (ii) such time as (a) in the case of Baker Brothers, the Investor and its affiliates no longer beneficially own at least 1,134,919 shares of our capital stock, or (b) in the case of Redmile, the Investor and its affiliates no longer beneficially own at least 945,765 shares of our capital stock; (iii) following the third anniversary of the completion of this offering, such time as each of Baker Brothers or Redmile and their respective affiliates, respectively, holds less than 5% of our as-converted securities; and (iv) the consummation of a Deemed Liquidation, we will have the obligation to support the nomination of, and to cause our board of directors to include in the slate of nominees recommended to our stockholders for election, one Investor Designee of each of Baker Brothers and Redmile.

Table of Contents

Index to Financial Statements

The nomination of each Investor Designee shall be subject to the reasonable and good faith determination of a majority of our disinterested directors, after consultation with our outside legal counsel, that such Investor Designee is qualified to serve as a member of our board of directors under applicable laws, the rules of the Nasdaq Stock Market LLC (Nasdaq), our amended and restated bylaws and any of our company policies. If an Investor Designee resigns from his or her seat on our board of directors or is removed or does not become a director for any reason, the vacancy will be filled by the election or appointment of another Investor Designee of the applicable Investor as soon as reasonably practicable, subject to compliance with applicable laws, rules and regulations.

Director Independence

Upon the completion of this offering, our common stock will be listed on the Nasdaq Global Select Market. Under the rules of Nasdaq, independent directors must comprise a majority of a listed company's board of directors within one year of the completion of this offering. In addition, the rules of Nasdaq require that, subject to specified exceptions, each member of a listed company's audit, compensation and corporate governance and nominating committees be independent. Audit committee members and compensation committee members must also satisfy the independence criteria set forth in Rule 10A-3 and Rule 10C-1, respectively, under the Exchange Act. Under the rules of Nasdaq, a director will only qualify as an "independent director" if, in the opinion of that company's board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director.

To be considered to be independent for purposes of Rule 10A-3 and under the rules of Nasdaq, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors or any other board committee: (1) accept, directly or indirectly, any consulting, advisory or other compensatory fee from the listed company or any of its subsidiaries or (2) be an affiliated person of the listed company or any of its subsidiaries.

To be considered independent for purposes of Rule 10C-1 and under the rules of Nasdaq, the board of directors must affirmatively determine that each member of the compensation committee is independent, including a consideration of all factors specifically relevant to determining whether the director has a relationship to the company which is material to that director's ability to be independent from management in connection with the duties of a compensation committee member, including: (1) the source of compensation of such director, including any consulting, advisory or other compensatory fee paid by the company to such director and (2) whether such director is affiliated with the company, a subsidiary of the company or an affiliate of a subsidiary of the company.

Our board of directors has undertaken a review of its composition, the composition of its committees and the independence of each director and considered whether any director has a material relationship with us that could compromise his or her ability to exercise independent judgment in carrying out his or her responsibilities. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our board of directors has determined that Michael Loberg, M. Kathleen Behrens, Julie Hambleton, Michael Lee, Kelvin Neu, William Strohl, Christina Teng Topsøe and Jakob Haldor Topsøe, representing eight of our nine directors, do not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is "independent" as that term is defined under the rules of Nasdaq.

In making these determinations, our board of directors considered the current and prior relationships that each non-employee director has with our company and all other facts and circumstances our board of directors deemed relevant in determining their independence, including the beneficial ownership of our capital stock by each non-employee director, and the transactions involving them described in the section titled "Certain Relationships and Related Party and Other Transactions."

Board Leadership Structure

Our board of directors is currently chaired by Michael Loberg. As a general policy, our board of directors believes that separation of the positions of Chair of our board of directors and Chief Executive Officer reinforces the independence of our board of directors from management, creates an environment that encourages objective oversight of management's performance and enhances the effectiveness of our board of directors as a whole. As such, Fred

Table of Contents

Index to Financial Statements

Schwarzer serves as our Chief Executive Officer and President while Michael Loberg serves as the Chair of our board of directors but is not an officer. We currently expect the positions of Chair of our board of directors and Chief Executive Officer to continue to be held by two individuals in the future.

Role of the Board in Risk Oversight

Our board of directors has an active role, as a whole and also at the committee level, in overseeing the management of our risks. Our board of directors is responsible for general oversight of risks and regular review of information regarding our risks, including credit risks, liquidity risks and operational risks. The compensation committee is responsible for overseeing the management of risks relating to our executive compensation plans and arrangements. The audit committee is responsible for overseeing the management of risks relating to accounting matters and financial reporting. The corporate governance and nominating committee is responsible for overseeing the management of risks associated with the independence of our board of directors and potential conflicts of interest. Although each committee is responsible for evaluating certain risks and overseeing the management of such risks, our entire board of directors is regularly informed through discussions from committee members about such risks. Our board of directors believes its administration of its risk oversight function has not negatively affected the board of directors' leadership structure.

Committees of Our Board of Directors

Our board of directors has established an audit committee, a compensation committee, a corporate governance and nominating committee and a research and clinical development committee. The composition and responsibilities of each of the committees of our board of directors are described below. Members serve on these committees until their resignation or until otherwise determined by our board of directors. Our board of directors may establish other committees as it deems necessary or appropriate from time to time.

Audit Committee

The members of our audit committee are M. Kathleen Behrens, Julie Hambleton and Michael Loberg. The chair of our audit committee is M. Kathleen Behrens. Our board of directors has determined that each of the members of our audit committee satisfies the independence requirements under the listing standards of Nasdaq and Rule 10A-3 of the Exchange Act. Our board of directors has determined that M. Kathleen Behrens is an "audit committee financial expert" within the meaning of SEC regulations. Each member of our audit committee can read and understand fundamental financial statements in accordance with applicable requirements. In arriving at these determinations, our board of directors examined each audit committee member's scope of experience and the nature of their employment in the corporate finance sector.

Our audit committee oversees our corporate accounting and financial reporting process and assists our board of directors in monitoring our financial systems. Our audit committee will also:

- select and hire the independent registered public accounting firm to audit our financial statements;
- help to ensure the independence and performance of the independent registered public accounting firm;
- approve audit and non-audit services and fees;
- review financial statements and discuss with management and the independent registered public accounting firm our annual audited and quarterly financial statements, the results of the independent audit and the quarterly reviews and the reports and certifications regarding internal controls over financial reporting and disclosure controls;
- prepare the audit committee report that the SEC requires to be included in our annual proxy statement;
- review reports and communications from the independent registered public accounting firm;
- review the adequacy and effectiveness of our internal controls and disclosure controls and procedure;
- review our policies on risk assessment and risk management;
- review and monitor conflicts of interest situations, and approve or prohibit any involvement in matters that may involve a conflict of interest or taking of a corporate opportunity;
- review related party transactions; and

Table of Contents

Index to Financial Statements

- establish and oversee procedures for the receipt, retention, and treatment of accounting related complaints and the confidential submission by our employees of concerns regarding questionable accounting or auditing matters.

Our audit committee operates under a written charter that satisfies the applicable rules of the SEC and the listing standards of Nasdaq.

Compensation Committee

The members of our compensation committee are Christina Teng Topsøe, M. Kathleen Behrens and Michael Loberg. The chair of our compensation committee is Christina Teng Topsøe. Our board of directors has determined that each of the members of our compensation committee is independent under the listing standards of Nasdaq and a "non-employee director" as defined in Rule 16b-3 under the Exchange Act.

Our compensation committee oversees our compensation policies, plans, and benefits programs. The compensation committee will also:

- oversee our overall compensation philosophy and compensation policies, plans, and benefit programs;
- review and approve or recommend to the board of directors for approval compensation for our executive officers and directors;
- prepare the compensation committee report that the SEC will require to be included in our annual proxy statement; and
- administer our equity compensation plans.

Our compensation committee operates under a written charter that satisfies the applicable rules of the SEC and the listing standards of Nasdaq.

Corporate Governance and Nominating Committee

The members of our corporate governance and nominating committee are Christina Teng Topsøe, M. Kathleen Behrens and Michael Loberg. The chair of our corporate governance and nominating committee is Christina Teng Topsøe. Our board of directors has determined that each member of our corporate governance and nominating committee is independent under the applicable listing standards of Nasdaq.

Our corporate governance and nominating committee oversees and assists our board of directors in reviewing and recommending nominees for election as directors. Specifically, the corporate governance and nominating committee will:

- identify, evaluate, and make recommendations to our board of directors regarding nominees for election to our board of directors and its committees;
- consider and make recommendations to our board of directors regarding the composition of our board of directors and its committees;
- review developments in corporate governance practices;
- evaluate the adequacy of our corporate governance practices and reporting; and
- evaluate the performance of our board of directors and of individual directors.

Our corporate governance and nominating committee operates under a written charter that satisfies the listing standards of Nasdaq.

Research and Clinical Development Committee

The members of our research and clinical development committee are Julie Hambleton, William Strohl, Michael Loberg and Kelvin Neu. The co-chairs of our research and clinical development committee are Julie Hambleton and William Strohl.

Specific responsibilities of our research and clinical development committee include:

- advising our board of directors concerning our research and scientific strategies, plans and efforts;
- evaluating scientific opportunities under consideration by management;

Table of Contents

Index to Financial Statements

- reviewing external scientific research, discoveries and commercial developments, as appropriate; and
- evaluating our overall intellectual property strategies.

Our research and clinical development committee operates under a written charter.

Director Compensation

Other than as described below, we did not pay any cash compensation to our directors for service on our board of directors during 2018. All compensation paid to Mr. Schwarzer is for services rendered as our Chief Executive Officer and President.

In October 2018, the compensation, nomination and governance committee of our board of directors adopted a cash compensation policy for members of our board of directors who are not substantial investors in, or employees or founders of, our company.

This policy will be replaced with the policy described below under "—Outside Director Compensation Policy," subject to stockholder approval.

The following table presents all payments or equity awards made to our non-employee directors during 2018.

NAME	FEES EARNED OR PAID IN CASH ($)	OPTION AWARDS ($) (1)(2)	ALL OTHER COMPENSATION ($)	TOTAL ($)
M. Kathleen Behrens, Ph.D. (3)	—	—	—	—
Julie Hambleton, M.D. (4)(5)	15,000	14,483	—	29,483
Dana Leach, Ph.D. (6)	17,500	—	—	17,500
Michael Lee (7)	—	—	—	—
Michael Loberg, Ph.D. (8)	30,000	—	—	30,000
Kelvin Neu, M.D. (7)	—	—	—	—
William Strohl, Ph.D. (4)(9)	15,000	14,483	—	29,483
Nelson Teng, M.D., Ph.D. (6)	—	—	—	—
Christina Teng Topsøe (4)	—	—	—	—
Henrik Topsøe (10)	—	—	—	—
Jakob Haldor Topsøe (4)	—	—	—	—

(1) Represents the aggregate grant date fair value of option awards granted to the director in the applicable fiscal year, computed in accordance with FASB ASC Topic 718. See Note 6 to our financial statements included elsewhere in this prospectus for a discussion of the assumptions made by us in determining the grant date fair value of our equity awards.

(2) As of December 31, 2018, our non-employee directors held outstanding options to purchase the number of shares of common stock as follows: Dr. Hambleton (15,132 shares); Dr. Leach (30,264 shares); Dr. Strohl (15,132 shares); and Dr. Teng (121,058 shares).

(3) Dr. Behrens did not serve as a member of our board of directors in 2018 and was elected to serve as a member of our board of directors in January 2019. We granted an option to purchase 15,132 shares of our common stock to Dr. Behrens in connection with her commencement of service on our board of directors.

(4) Drs. Hambleton and Strohl, Ms. Topsøe and Mr. Jakob Haldor Topsøe were each elected to serve as a member of our board of directors in August 2018.

(5) As of December 31, 2018, Dr. Hambleton held an option to purchase 15,132 shares of our common stock. 25% of the shares subject to the option vested on September 1, 2019, and the remaining 75% will vest in equal monthly installments over the three years following such first anniversary, subject to Dr. Hambleton's continuous service through each vesting date.

(6) Drs. Leach and Teng each resigned from our board of directors in June 2019.

(7) Mr. Lee and Dr. Neu did not serve as members of our board of directors in 2018 and were elected to serve as members of our board of directors in July 2019 and June 2019, respectively.

(8) As of December 31, 2018, Dr. Loberg held 30,264 shares of common stock that are subject to a repurchase right that lapsed as to 7,566 of the shares on September 8, 2016 and that lapses as to the remaining shares at the rate of 1/48th of the total shares per month over the following three years. As of that date, 5,674 of these shares remained subject to repurchase by us.

(9) As of December 31, 2018, Dr. Strohl held an option to purchase 15,132 shares of our common stock. The option will vest 25% on September 1, 2019, and the remaining 75% will vest in equal monthly installments over the three years following such first anniversary, subject to Dr. Strohl's continuous service through each vesting date.

(10) Mr. Henrik Topsøe resigned from our board of directors in August 2018.

Table of Contents

Index to Financial Statements

In August 2019 and in connection with this offering, our board of directors and stockholders approved the grant of options to purchase 12,100 shares of our common stock to each of our directors, other than to Mr. Schwarzer, with an exercise price equal to the initial public offering price of our common stock, which became effective as of the date of the registration statement of which this prospectus forms a part. Each of these options vests as to 1/3rd of the shares subject to the option on the one year anniversary of the grant date and as to 1/36th of the shares subject to the option each month following the grant date, in each case, subject to continued service through each applicable vesting date.

Outside Director Compensation Policy

Our board of directors has adopted, and our stockholders approved, a new compensation policy for our non-employee directors that became effective as of the date of the effectiveness of the registration statement of which this prospectus forms a part. This policy was developed with input from our compensation committee's independent compensation consultant, Radford, regarding practices and compensation levels at comparable companies. It is designed to attract, retain and reward non-employee directors.

Under the director compensation policy, each non-employee director will receive the cash and equity compensation for his or her services as a member of our board of directors, as described below. We also will continue to reimburse our non-employee directors for reasonable, customary and documented travel expenses to meetings of our board of directors or its committees.

The director compensation policy includes a maximum annual limit of $750,000 or, in the first year of a non-employee director's service on our board of directors, $1,000,000, of cash compensation and equity awards that may be paid, issued or granted to a non-employee director in any fiscal year. For purposes of these limitations, the value of an equity award is based on its grant date fair value (determined in accordance with GAAP). Any cash compensation paid or equity awards granted to a person for his or her services as an employee, or for his or her services as a consultant (other than as a non-employee director), will not count for purposes of the limitation. The maximum limit does not reflect the intended size of any potential compensation or equity awards to our non-employee directors.

Cash Compensation

Following the completion of this offering, each non-employee director will be paid an annual cash retainer of $20,000. In addition, each non-employee director will be entitled to receive the following cash compensation for his or her services under the policy:

- $20,000 per year for service as chair of the board of directors;
- $10,000 per year for service as chair of the audit committee;
- $5,000 per year for service as a member of the audit committee;
- $10,000 per year for service as chair of the compensation committee;
- $5,000 per year for service as a member of the compensation committee;
- $10,000 per year for service as chair of the corporate governance and nominating committee;
- $5,000 per year for service as a member of the corporate governance and nominating committee;
- $10,000 per year for service as chair of the research and clinical development committee; and
- $5,000 per year for service as a member of the research and clinical development committee.

Each non-employee director who serves as a committee chair will receive only the additional annual cash fee as the chair of the committee, and not the additional annual fee as a member of the committee. All cash payments to non-employee directors are paid quarterly in arrears on a prorated basis.

Equity Compensation

Initial Options

Each person who first becomes a non-employee director after the effective date of the director compensation policy will be granted an initial award of a nonstatutory stock option (the Initial Option) covering 12,100 shares of our common stock. The Initial Option will be scheduled to vest as to 1/3rd of the shares subject to the option on the first anniversary of the director's commencement of service to us and 1/36th of the shares will vest each month

thereafter, subject to continuing to provide services to us through each applicable vesting date. If the person was a member of our board of directors and also an employee, becoming a non-employee director due to termination of employment will not entitle the person to an Initial Option.

Annual Options

Each non-employee director automatically will receive, at the same time we make our annual equity awards to our executive officers, an annual award of a nonstatutory stock option (an Annual Option) covering 6,050 shares of our common stock. Each Annual Option will vest as to 1/12th of the shares subject to the option for each month of service after the date of the first annual meeting of our stockholders following the date of grant, and will vest in full on the earlier of (i) the twelve-month anniversary of the date of the first annual meeting of our stockholders following the date of grant or (ii) the date of the second regularly scheduled annual meeting of our stockholders that next follows the date of grant of the Annual Option, subject to continuing to provide service to us through the applicable vesting date.

The term of each option granted under the policy will be 10 years, subject to earlier termination as provided in the 2018 Plan. Each option granted under the policy will have an exercise price per share equal to 100% of the fair market value per share on the date of grant.

Change in Control

In the event of a “change in control” (as defined in the 2018 Plan), each non-employee director will fully vest in his or her outstanding company equity awards provided that the non-employee director continues to be a non-employee director through the date of such change in control.

Code of Business Conduct and Ethics

Our board of directors has adopted a written code of business conduct and ethics which became effective immediately upon the effectiveness of the registration statement of which this prospectus forms a part. Our code of business conduct and ethics will apply to all our directors, officers and employees, including our principal executive officer, principal financial officer and principal accounting officer or controller, or persons performing similar functions. The full text of our code of business conduct and ethics will be posted on our website at www.igmbio.com upon the completion of this offering. We intend to disclose on our website identified above or in a current report on Form 8-K any future amendments of our code of business conduct and ethics or waivers that exempt any principal executive officer, principal financial officer, principal accounting officer or controller, persons performing similar functions or our directors from provisions in the code of business conduct and ethics as and to the extent required by applicable rules and exchange requirements. Information contained on, or that can be accessed through, our website is not incorporated by reference in this prospectus, and you should not consider information on our website to be part of this prospectus.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee are currently, or has been at any time, one of our officers or employees. None of our executive officers currently serve, or has served during the past fiscal year, as a member of the board of directors or the compensation committee (or other board committee performing equivalent functions or, in the absence of any such committee, the entire board of directors) of any entity that has one or more executive officers serving as a member of our board of directors or our compensation committee. Ms. Topsøe may be deemed to have an interest in certain transactions requiring disclosure under Item 404 of Regulation S-K under the Securities Act. These transactions are disclosed in “Certain Relationships and Related Party and Other Transactions,” and such disclosure is incorporated by reference herein.

Table of Contents

Index to Financial Statements

EXECUTIVE COMPENSATION

Our named executive officers, who consist of our principal executive officer and the next two most highly compensated executive officers in 2018, are:

- Fred Schwarzer, our Chief Executive Officer and President;
- Daniel Chen, M.D., Ph.D., our Chief Medical Officer; and
- Bruce Keyt, Ph.D., our Chief Scientific Officer.

Summary Compensation Table

The following table presents all of the compensation paid or awarded to or earned by our named executive officers, for the fiscal year ended December 31, 2018:

NAME AND PRINCIPAL POSITION	YEAR	SALARY ($)	BONUS ($)	STOCK AWARDS ($)	OPTION AWARDS ($) [1]	NON-EQUITY INCENTIVE PLAN COMPENSATION ($)	ALL OTHER COMPENSATION ($)	TOTAL ($)
Fred Schwarzer *Chief Executive Officer and President*	2018	376,000	—	—	143,214	—	—	519,214
Daniel Chen, M.D., Ph.D. *Chief Medical Officer* [2]	2018	208,333	—	161,700 [3]	345,605	—	—	715,638
Bruce Keyt, Ph.D. *Chief Scientific Officer*	2018	352,333	—	—	—	—	—	352,333

(1) Represents the aggregate grant date fair value of option awards granted to the officer in the applicable fiscal year, computed in accordance with FASB ASC Topic 718. See Note 6 to our financial statements included elsewhere in this prospectus for a discussion of the assumptions made by us in determining the grant date fair value of our equity awards. Our named executive officers will only realize compensation to the extent the trading price of our common stock is greater than the exercise price of such stock options.

(2) Dr. Chen became our Chief Medical Officer in August 2018. The salary reported reflects the pro rata portion of Dr. Chen's annual salary of $500,000 earned during 2018.

(3) Represents the aggregate grant date fair value of restricted stock awards granted to the officer in the applicable fiscal year, computed in accordance with FASB ASC Topic 718. See Note 6 to our financial statements included elsewhere in this prospectus for a discussion of the assumptions made by us in determining the grant date fair value of our equity awards. Our named executive officers will only realize compensation to the extent the trading price of our common stock is greater than the exercise price of such stock options.

Table of Contents

Index to Financial Statements

Outstanding Equity Awards at Fiscal Year-End

The following table provides information regarding the outstanding equity awards held by our named executive officers as of December 31, 2018. See "—Equity, Benefit and Retirement Plans" below for more information.

		OPTION AWARDS				STOCK AWARDS	
NAME	GRANT DATE [1]	NUMBER OF SECURITIES UNDERLYING EXERCISABLE OPTIONS	NUMBER OF SECURITIES UNDERLYING UNEXERCISABLE OPTIONS	OPTION EXERCISE PRICE ($) [2]	OPTION EXPIRATION DATE	NUMBER OF SHARES OF STOCK THAT HAVE NOT VESTED	MARKET VALUE OF SHARES OR UNITS OF STOCK THAT HAVE NOT VESTED ($)
Fred Schwarzer	3/10/2015	85,118 [3]	5,675	0.93	3/10/2025	—	—
	12/21/2018	89,374 [4]	69,514	1.39	12/21/2018	—	—
Daniel Chen, M.D., Ph.D.	12/30/2018	—	361,090 [5]	1.39	12/30/2028	—	
	12/30/2018	—	—	—	—	116,518 [6]	161,700
Bruce Keyt, Ph.D.	1/12/2013	143,756 [7]	—	0.93	1/12/2023	—	—
	3/10/2015	28,372 [3]	1,892	0.93	3/10/2025	—	—
	1/16/2017	47,288 [3]	43,505	1.00	1/16/2027	—	—

(1) Each of the outstanding options to purchase shares of our common stock was granted pursuant to either our 2010 Plan or 2018 Plan.

(2) This column represents the fair market value of a share of our common stock on the date of grant, as determined by our board of directors or its authorized committee.

(3) 1/48th of the shares subject to the option vest each month following the vesting commencement date, subject to the individual's continuous service through each vesting date. The award also is subject to vesting acceleration under certain circumstances as will be more fully described below under "—Potential Payments upon Termination or Change in Control—Change in Control and Severance Policy."

(4) 1/2 of the shares subject to the option vest on the vesting commencement date and 1/48th of the shares vest monthly thereafter, subject to Mr. Schwarzer's continuous service through each vesting date.

(5) 1/4th of the shares subject to the option vest on the first anniversary of the vesting commencement date and 1/48th of the shares vest monthly thereafter, subject to Dr. Chen's continuous service through each vesting date. The award also is subject to vesting acceleration under certain circumstances as will be more fully described in "—Potential Payments upon Termination or Change in Control—Daniel Chen Arrangements."

(6) The award is subject to forfeiture under certain circumstances through August 2020 as more fully described in his Restricted Stock Grant Agreement, dated December 30, 2018.

(7) The shares subject to the option were fully vested as of December 31, 2018.

Executive Letter Agreements

Fred Schwarzer

In August 2019, we entered into a confirmatory employment letter with Fred Schwarzer, our Chief Executive Officer and President. The employment letter has no specific term and provides that Mr. Schwarzer is an at-will employee. The employment letter supersedes all existing agreements and understandings that Mr. Schwarzer may have concerning his employment relationship with us. The employment letter also provides Mr. Schwarzer with severance and change in control benefits pursuant to our Change in Control and Severance Policy described below. Mr. Schwarzer's current annual base salary is $428,000 and he is currently eligible for an annual target cash incentive payment equal to 40% of his annual base salary.

Daniel Chen, M.D., Ph.D.

In July 2018, we entered into an employment agreement with Daniel Chen, our Chief Medical Officer (the Chen Employment Agreement). The Chen Employment Agreement has no specific term and provides that Dr. Chen is an at-will employee. It also provides for a $500,000 annual base salary, no annual target bonus and initial stock and option grants. The Chen Employment Agreement also provides Dr. Chen with certain severance and change in control benefits, as described below under "—Potential Payments upon Termination or Change in Control—Daniel Chen Arrangements."

Table of Contents

Index to Financial Statements

Bruce Keyt, Ph.D.

In August 2019, we entered into a confirmatory employment letter with Bruce Keyt, our Chief Scientific Officer. The employment letter has no specific term and provides that Dr. Keyt is an at-will employee. The employment letter supersedes all existing agreements and understandings that Dr. Keyt may have concerning his employment relationship with us. The employment letter also provides Dr. Keyt with severance and change in control benefits pursuant to our Change in Control and Severance Policy described below. Dr. Keyt's current annual base salary is $357,000 and he is currently eligible for an annual target cash incentive payment equal to 35% of his annual base salary.

Potential Payments upon Termination or Change in Control

Prior to the completion of this offering, we did not have a formal plan with respect to severance benefits payable to our named executive officers and other key employees. From time to time, we granted equity awards to, or entered into employment agreements with, certain key employees, including our named executive officers, that provide for accelerated vesting of equity awards in the event such key employee's employment was involuntarily terminated under certain circumstances.

Change in Control and Severance Policy

Our board of directors has approved the following change in control and severance benefits for our current executive officers (other than Dr. Chen) and other key employees (collectively, participants) pursuant to a Change in Control and Severance Policy (the Severance Policy). Unless sooner terminated by our board of directors or compensation committee or by the consent of an impacted participant, the Severance Policy has a term of three years, subject to potential extension upon the occurrence of certain events set forth in the Severance Policy.

The Severance Policy provides that if we terminate a participant's employment outside of the period beginning three months prior to and ending 12 months after a "change in control" (as defined in the Severance Policy) (such period, the "change in control period") other than for "cause" (as generally defined in the Severance Policy), death or disability (or, in the case of Mr. Schwarzer, if Mr. Schwarzer terminates his employment due to a "constructive termination" (as defined in the Severance Policy)), the participant will receive the following:

- a lump sum payment equal to nine months' base salary (12 months for Mr. Schwarzer); and
- a lump sum payment equal to nine months of COBRA premiums (12 months for Mr. Schwarzer).

The Severance Policy provides that if a participant's employment is terminated during the change in control period either by us other than for cause, death or disability or by the participant due to a "constructive termination", the participant will receive the following:

- a lump sum payment equal to 12 months' base salary (18 months for Mr. Schwarzer);
- 100% acceleration of unvested time-based equity awards;
- a lump sum payment equal to the participant's pro-rata target annual bonus for the year of termination plus 100% of the participant's target annual bonus for the year of termination (150% for Mr. Schwarzer); and
- a lump sum payment equal to 12 months of COBRA premiums (18 months for Mr. Schwarzer).

The Severance Policy also provides that if in connection with a change in control, a participant's then-unvested time-based equity awards are not assumed or replaced or substituted with an equivalent award by the acquiror or successor corporation, then 100% of such equity awards will immediately vest and become exercisable (if applicable).

The Severance Policy provides that if we discover after a participant's receipt of payments or benefits under the Severance Policy that grounds for the termination of the participant's employment for cause existed, then the participant will not receive any further payments or benefits under the Severance Policy and, to the extent permitted under applicable laws, will be required to repay to us any payments or benefits he or she received under the Severance Policy (or any financial gain derived from such payments or benefits).

In addition, the Severance Policy provides that if any payments or benefits received by a participant under the Severance Policy or otherwise would constitute "parachute payments" within the meaning of Section 280G of the

Code and be subject to excise taxes imposed by Section 4999 of the Code, such amount will either be delivered in full or reduced so as not to be subject to excise taxation, whichever amount is higher. The Severance Policy does not require us to provide any tax gross-ups.

To receive the severance described above, the participant must sign and not revoke our standard separation agreement and release of claims within the timeframe that is set forth in the Severance Policy. Except for provisions providing for accelerated vesting of a participant's performance-based equity awards upon a termination either by us other than for cause, death or disability or by the participant due to a constructive termination, the Severance Policy supersedes any provisions in a participant's offer letter or equity award agreement that provide for accelerated vesting upon certain terminations of employment.

Daniel Chen Arrangements

Dr. Chen will not be a participant in the Severance Policy. Pursuant to the Chen Employment Agreement, as described under "—Employment Arrangements" above, if Dr. Chen's employment is terminated by us without "cause" (as defined in the Chen Employment Agreement) or if he terminates his employment for "good reason" (as defined in the Chen Employment Agreement), he will be entitled to severance pay equal to a specified number of months of his base salary, plus an additional $2,000 for each month of such severance period. To receive the severance described above, Dr. Chen must sign and not revoke our standard separation agreement and release of claims within the timeframe that is set forth in the Chen Employment Agreement. In addition, if Dr. Chen's employment is terminated by us without cause or if he terminates his employment for good reason, the vesting of the stock option provided for in the Chen Employment Agreement (the Chen Option) will accelerate by an additional 12 months. In the event of a "change in control" (as defined in the Chen Employment Agreement), the vesting of the Chen Option will fully accelerate.

Equity, Benefit and Retirement Plans

2018 Omnibus Incentive Plan (as Amended and Restated)

Our board of directors has adopted, and our stockholders approved, an amendment and restatement to our 2018 Omnibus Incentive Plan (2018 Plan). The amendment and restatement to our 2018 Plan became effective on the business day immediately prior to the effective date of our registration statement related to this offering. Our 2018 Plan, as amended and restated, provides for the grant of incentive stock options, within the meaning of Section 422 of the Code to our employees, and for the grant of nonstatutory stock options, restricted stock, restricted stock units (RSUs), stock appreciation rights, performance units, and performance shares to our employees, directors, and consultants.

Authorized shares. A total of 4,384,000 shares of our common stock are reserved for issuance pursuant to our 2018 Plan. The number of shares of our common stock available for issuance under our 2018 Plan also includes an annual increase on the first day of each fiscal year beginning with the 2020 fiscal year, equal to the least of:

- 8,768,000 shares of our common stock;
- Four percent (4%) of the outstanding shares of our capital stock as of the last day of the immediately preceding fiscal year; or
- such other amount as our board of directors may determine.

If an award expires or becomes unexercisable without having been exercised in full, is surrendered pursuant to an exchange program, or, with respect to restricted stock, restricted stock units, performance units, or performance shares, is forfeited to or repurchased due to failure to vest, the unpurchased shares (or for awards other than stock options or stock appreciation rights, the forfeited or repurchased shares) will become available for future grant or sale under the 2018 Plan. With respect to stock appreciation rights, only the net shares actually issued will cease to be available under the 2018 Plan and all remaining shares under stock appreciation rights will remain available for future grant or sale under the 2018 Plan. Shares that have actually been issued under the amended and restated 2018 Plan under any award will not be returned to the 2018 Plan; provided, however, that if shares issued pursuant to awards of restricted stock, restricted stock units, performance shares, or performance units are repurchased or forfeited, such shares will become available for future grant under the 2018 Plan. Shares used to pay the exercise price of an award or satisfy the tax withholding obligations related to an award will become available for future grant

or sale under the 2018 Plan. To the extent an award is paid out in cash rather than shares, such cash payment will not result in a reduction in the number of shares available for issuance under the 2018 Plan.

Plan administration. Our board of directors or one or more committees appointed by our board of directors will administer our 2018 Plan. Our compensation committee is expected to administer our 2018 Plan. In addition, if we determine it is desirable to qualify transactions under our 2018 Plan as exempt under Rule 16b-3 of the Exchange Act, such transactions will be structured to satisfy the requirements for exemption under Rule 16b-3. Subject to the provisions of our 2018 Plan, the administrator has the power to administer our 2018 Plan and make all determinations deemed necessary or advisable for administering the 2018 Plan, including but not limited to, the power to determine the fair market value of our common stock, select the service providers to whom awards may be granted, determine the number of shares covered by each award, approve forms of award agreements for use under the 2018 Plan, determine the terms and conditions of awards (including, but not limited to, the exercise price, the times or times at which the awards may be exercised, any vesting acceleration or waiver or forfeiture restrictions, and any restriction or limitation regarding any award or the shares relating thereto), construe and interpret the terms of our 2018 Plan and awards granted under it, to prescribe, amend, and rescind rules relating to our 2018 Plan, including creating sub-plans, to permit participants to satisfy tax withholding obligations as set forth in the 2018 Plan, to modify or amend each award, including but not limited to the discretionary authority to extend the post-termination exercisability period of awards (provided that no option or stock appreciation right will be extended past its original maximum term), and to allow a participant to defer the receipt of payment of cash or the delivery of shares that would otherwise be due to such participant under an award. The administrator also has the authority to allow participants the opportunity to transfer outstanding awards to a financial institution or other person or entity selected by the administrator and to institute an exchange program by which outstanding awards may be surrendered or cancelled in exchange for awards of the same type which may have a higher or lower exercise price and/or different terms, awards of a different type and/or cash, or by which the exercise price of an outstanding award is increased or reduced. The administrator's decisions, interpretations, and other actions are final and binding on all participants to the full extent permitted by law.

Stock options. Stock options may be granted under our 2018 Plan. The exercise price of options granted under our 2018 Plan must at least be equal to the fair market value of our common stock on the date of grant. The term of an option may not exceed ten years. With respect to any participant who owns more than 10% of the voting power of all classes of our outstanding stock, the term of an incentive stock option granted to such participant must not exceed five years and the exercise price must equal at least 110% of the fair market value on the grant date. The administrator will determine the methods of payment of the exercise price of an option, which may include cash, shares, or other property acceptable to the administrator, as well as other types of consideration permitted by applicable law. After the termination of service of an employee, director, or consultant, he or she may exercise his or her option for the period of time stated in his or her option agreement. In the absence of a specified time in an award agreement, if termination is due to death or disability, the option will remain exercisable for 12 months. In all other cases, in the absence of a specified time in an award, the option will remain exercisable for three months. However, in no event may an option be exercised later than the expiration of its term.

Stock appreciation rights. Stock appreciation rights may be granted under our 2018 Plan. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the exercise date and the date of grant. Stock appreciation rights may not have a term exceeding ten years. After the termination of service of an employee, director, or consultant, he or she may exercise his or her stock appreciation right for the period of time stated in his or her stock appreciation rights agreement. In the absence of a specified time in an award agreement, if termination is due to death or disability, the stock appreciation rights will remain exercisable for 12 months. In all other cases, in the absence of a specified time in an award agreement, the stock appreciation rights will remain exercisable for three months following the termination of service. However, in no event may a stock appreciation right be exercised later than the expiration of its term. Subject to the provisions of our 2018 Plan, the administrator determines the other terms of stock appreciation rights, including when such rights become exercisable and whether to pay any increased appreciation in cash or with shares of our common stock, or a combination thereof, except that the per share exercise price for the shares to be issued pursuant to the exercise of a stock appreciation right will be no less than 100% of the fair market value per share on the date of grant.

Table of Contents

Index to Financial Statements

Restricted stock. Restricted stock may be granted under our 2018 Plan. Restricted stock awards are grants of shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator will determine the number of shares of restricted stock granted to any employee, director, or consultant and, subject to the provisions of our 2018 Plan, will determine the terms and conditions of such awards. The administrator may impose whatever conditions to vesting it determines to be appropriate (for example, the administrator may set restrictions based on the achievement of specific performance goals or continued service to us); provided, however, that the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed. Recipients of restricted stock awards generally will have voting and dividend rights with respect to such shares upon grant without regard to vesting, unless the administrator provides otherwise. Shares of restricted stock that do not vest are subject to our right of repurchase or forfeiture.

RSUs. RSUs may be granted under our 2018 Plan. Each RSU represents an amount equal to the fair market value of one share of our common stock. Subject to the provisions of our 2018 Plan, the administrator determines the terms and conditions of RSUs, including the vesting criteria and the form and timing of payment. The administrator may set vesting criteria based upon the achievement of company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), applicable federal or state securities laws, or any other basis determined by the administrator in its discretion. The administrator, in its sole discretion, may pay earned restricted stock units in the form of cash, in shares, or in some combination of both. Notwithstanding the foregoing, the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed.

Performance units and performance shares. Performance units and performance shares may be granted under our 2018 Plan. Performance units and performance shares are awards that will result in a payment to a participant only if performance goals established by the administrator are achieved or the awards otherwise vest. The administrator will establish performance objectives or other vesting criteria in its discretion, which, depending on the extent to which they are met, will determine the number and/or the value of performance units and performance shares to be paid out to participants. The administrator may set performance objectives based on the achievement of company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), applicable federal or state securities laws, or any other basis determined by the administrator in its discretion. After the grant of a performance unit or performance share, the administrator, in its sole discretion, may reduce or waive any performance criteria or other vesting provisions for such performance units or performance shares. Performance units shall have an initial dollar value established by the administrator on or prior to the grant date. Performance shares shall have an initial value equal to the fair market value of our common stock on the grant date. The administrator, in its sole discretion, may pay earned performance units or performance shares in the form of cash, in shares, or in some combination thereof.

Non-transferability of awards. Unless the administrator provides otherwise, our 2018 Plan generally does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime. If the administrator makes an award transferrable, such award will contain such additional terms and conditions as the administrator deems appropriate.

Certain adjustments. In the event of certain changes in our capitalization, such as an extraordinary dividend or distribution, recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, exchange of our shares or other securities, issuance of warrants, or any similar equity restructuring transaction, to prevent diminution or enlargement of the benefits or potential benefits available under our 2018 Plan, the administrator will adjust the number and class of shares that may be delivered under our 2018 Plan and/or the number, class, and price of shares covered by each outstanding award, and the numerical share limits set forth in our 2018 Plan.

Dissolution or liquidation. In the event of our proposed liquidation or dissolution, the administrator will notify participants as soon as practicable and all awards will terminate immediately prior to the consummation of such proposed transaction.

Merger or change in control. Our 2018 Plan provides that in the event of a merger or change in control, as defined under our 2018 Plan, each outstanding award will be treated as the administrator determines, without a requirement

to obtain a participant's consent, including, without limitation, that such award will be continued by the successor corporation or a parent or subsidiary of the successor corporation, An award will be considered continued if following the transaction, (i) the award gives the right to purchase or receive the consideration received in the transaction by holders of our shares or (ii) the award is terminated in exchange for an amount of cash and/or property, if any, equal to the amount that would have been received upon the exercise or realization of the award, which payment may be subject to any escrow applicable to holders of our common stock in connection with the transaction or subjected to the award's original vesting schedule. The administrator is not required to treat all awards, all awards held by a participant, or all awards of the same type, similarly.

In the event that a successor corporation or its parent or subsidiary does not continue an outstanding award, then such award will fully vest, all restrictions on such award will lapse, all performance goals or other vesting criteria applicable to such award will be deemed achieved at 100% of target levels and such award will become fully exercisable, if applicable, for a specified period prior to the transaction, unless specifically provided for otherwise under the applicable award agreement or other written agreement with the participant. The award will then terminate upon the expiration of the specified period of time. If an option or stock appreciation right is not assumed or substituted, the administrator will notify the participant in writing or electronically that such option or stock appreciation right will be exercisable for a period of time determined by the administrator in its sole discretion and the option or stock appreciation right will terminate upon the expiration of such period.

If an outside director's awards are assumed or substituted for in a merger or change in control and the service of such outside director is terminated on or following a change in control, other than pursuant to a voluntary resignation, his or her options and stock appreciation rights, if any, will vest fully and become immediately exercisable, all restrictions on his or her restricted stock and restricted stock units will lapse and all performance goals or other vesting requirements for his or her performance shares and units will be deemed achieved at 100% of target levels, and all other terms and conditions met.

Clawback. Awards will be subject to any clawback policy of ours, and the administrator also may specify in an award agreement that the participant's rights, payments, and/or benefits with respect to an award will be subject to reduction, cancellation, forfeiture, and/or recoupment upon the occurrence of certain specified events. Our board of directors may require a participant to forfeit, return, or reimburse us all or a portion of the award and/or shares issued under the award, any amounts paid under the award, and any payments or proceeds paid or provided upon disposition of the shares issued under the award in order to comply with such clawback policy or applicable laws.

Amendment; termination. The administrator has the authority to amend, suspend, or terminate our 2018 Plan provided such action does not impair the existing rights of any participant, subject to certain exceptions in accordance with the terms of our 2018 Plan. Our 2018 Plan automatically will terminate in 2029, unless we terminate it sooner.

2010 Stock Plan (as Amended and Restated)

Our 2010 Plan was originally adopted by our board of directors and approved by our stockholders in November 2010. Our 2010 Plan was most recently amended in December 2017. Our 2010 Plan allows us to provide incentive stock options, within the meaning of Section 422 of the Code, nonstatutory stock options and stock purchase rights to eligible employees, consultants and directors of ours and any parent or subsidiary of ours. Our 2010 Plan was terminated in 2019 and we will not grant any additional awards under our 2010 Plan. However, our 2010 Plan will continue to govern the terms and conditions of the outstanding awards previously granted under our 2010 Plan.

As of June 30, 2019, stock options covering 595,832 shares of our common stock were outstanding under our 2010 Plan.

Plan administration. Our 2010 Plan is administered by our board of directors or one or more committees appointed by our board of directors. The administrator's powers include the ability to amend, modify, extend, cancel or renew any award, accelerate, continue, extend or defer the exercisability or vesting of any award or to waive any restrictions or conditions applicable to any award. All questions of interpretation of the 2010 Plan or any award thereunder shall be determined by the administrator, whose determination is final and binding upon all persons having an interest in the 2010 Plan or such award.

Table of Contents

Index to Financial Statements

Eligibility. Employees, certain consultants or directors of ours or of any parent or subsidiary company of ours are eligible to receive awards. Only our employees or employees of any parent or subsidiary company of ours are eligible to receive incentive stock options.

Stock options. Stock options have been granted under our 2010 Plan. Subject to the provisions of our 2010 Plan, the administrator determines the term of an option, the number of shares subject to an option, and the time period in which an option may be exercised.

The term of an option is stated in the applicable award agreement, but the term of an option may not exceed 10 years from the grant date. The administrator determines the exercise price of options, which may not be less than 100% of the fair market value of our common stock on the grant date. However, an incentive stock option granted to an individual who directly or by attribution owns more than 10% of the total combined voting power of all of our classes of stock or of any our parent or subsidiary may have a term of no longer than five years from the grant date and has an exercise price of at least 110% of the fair market value of our common stock on the grant date. In addition, to the extent that the aggregate fair market value of the shares with respect to which incentive stock options are exercisable for the first time by an employee during any calendar year (under all our plans and any parent or subsidiary) exceeds $100,000, such options are treated as nonstatutory stock options.

The administrator determines how a participant may pay the exercise price of an option, and the permissible methods are generally set forth in the applicable award agreement. If a participant's service, as defined in our 2010 Plan, terminates, that participant may exercise the vested portion of his or her option for the period of time stated in the applicable award agreement. Vested options generally will remain exercisable for three months or such longer period of time as set forth in the applicable award agreement if a participant's status as a service provider terminates for a reason other than death, disability or cause. If a participant's status as a service provider terminates for cause, as defined in our 2010 Plan, the option shall immediately be terminated and cease to be exercisable. If a participant's status as a service provider terminates due to death or disability, vested options generally will remain exercisable for twelve months from the date of termination (or such other longer period as set forth in the applicable award agreement). In no event will an option remain exercisable beyond its original term. If a participant does not exercise his or her option within the time specified in the award agreement, the option will terminate. Except as described above, the administrator has the discretion to determine the post-termination exercisability periods for an option.

Stock purchase rights. The administrator is authorized to grant stock purchase rights. A stock purchase right is an award that entitles the participant to purchase shares of our common stock. The terms, conditions, restrictions and any applicable repurchase right related to grants of stock purchase rights are determined by the administrator, provided that the purchase price established by the administrator may not be less than 100% of fair market value of a share of common stock on the date of grant or on the date the purchase is consummated and the stock purchase right will be exercisable for the period set forth by the administrator, not to exceed 30 days.

Non-transferability of awards. During an applicable participant's lifetime, only that participant may exercise his or her award. No option may be assignable or transferable by the participant, except by will or by the laws of descent and distribution. However, to the extent permitted by the administrator in its discretion and set forth in the option agreement, a nonstatutory stock option or stock purchase right may be assignable or transferable subject to the limitations set forth in the 2010 Plan.

Certain adjustments. In the event of any change made in, or other events that occur with respect to, our stock subject to the 2010 Plan or subject to an award granted under the 2010 Plan without the receipt of consideration by us, through a merger, consolidation, reorganization, recapitalization, reincorporation, stock dividend, a dividend other than a stock dividend that has a material effect on the fair market value of our stock, stock split, reverse stock split, split-up, split-off, spin-off, combination of shares, exchange of shares, or similar change in our corporate structure not involving the receipt of consideration by us, the administrator will make appropriate and proportionate adjustments to (1) the class and maximum number of shares reserved for issuance under the 2010 Plan, (2) the class and maximum number of shares that may be issued upon the exercise of incentive stock options and (3) the class and number of shares and exercise price, strike price or purchase price, if applicable, of all outstanding stock awards in order to prevent dilution or enlargement of participants' rights under the 2010 Plan.

Table of Contents

Index to Financial Statements

Change in control. The administrator may, in its discretion, provide in any award agreement or, in the event of a change in control, as defined in the 2010 Plan, take such actions as it deems appropriate to provide for the acceleration of the exercisability and vesting in connection with such change in control of any or all outstanding awards and shares acquired upon the exercise thereof upon such conditions, including termination of the participant's service prior to, upon or following such change in control, and to the extent the administrator determines.

In the event of a change in control, the acquiror, as defined in the 2010 Plan, without the consent of any participant, may provide for the assumption or continuation of the rights and obligations under each or any award or portion thereof outstanding immediately prior to a change in control or for the substitution with a substantially equivalent award for the acquiror's stock. Any award or portion thereof which is neither assumed nor continued by the acquiror, as may be deemed to occur under the terms of the 2010 Plan, or that is not exercised at the time of such change of control, shall terminate and cease to be outstanding as of the time of consummation of the change in control. Notwithstanding the above, shares acquired upon exercise of an award prior to the change in control and any consideration received pursuant to the change in control with respect to such shares shall continue to be subject to all applicable provisions of the award agreement.

Alternatively, the administrator may, in its sole discretion and without participant consent, determine that upon the occurrence of a change in control, each or any award outstanding immediately prior to the change in control shall be canceled in exchange for a payment with respect to each vested share (and each unvested share if determined by the administrator), of stock subject to such canceled award in (i) cash, (ii) our stock or of a corporation or other entity a party to the change in control, or (iii) other property which, in any such case, shall be in an amount having a fair market value equal to the consideration paid per share of stock in the change in control over the applicable exercise price per share under such award. If determined by the administrator, such consideration, less all applicable withholding taxes, shall be paid to participants in respect of their canceled awards as soon as practicable following the date of the change in control and in respect of the unvested of their canceled awards, in accordance with such award's vesting schedule in effect prior to the change in control.

Amendment; termination. Subject to the terms of the 2010 Plan, our board of directors may terminate, amend or modify the 2010 Plan or any portion thereof at any time. As noted above, the 2010 Plan terminated in 2019 and we will not grant any additional awards under our 2010 Plan. However, all outstanding awards will continue to be governed by their existing terms.

2019 Employee Stock Purchase Plan

Our board of directors has adopted, and our stockholders approved, our 2019 Employee Stock Purchase Plan (ESPP). Our ESPP became effective on the business day immediately prior to the effective date of the registration statement of which this prospectus forms a part. However, no offering period or purchase period under the ESPP will begin unless and until determined by our board of directors. The ESPP is intended to have two components: a component that is intended to qualify as an "employee stock purchase plan" under Section 423 of the Code (the 423 Component) and a component that is not intended to so qualify (the Non-423 Component).

Authorized shares. A total of 280,000 shares of our common stock are available for sale under our ESPP. The number of shares of our common stock that are available for sale under our ESPP also includes an annual increase on the first day of each fiscal year beginning with the 2020 fiscal year, equal to the least of:

- 560,000 shares of our common stock;
- one percent (1%) of the outstanding shares of our capital stock as of the last day of the immediately preceding fiscal year; or
- such other amount as the administrator may determine.

Plan administration. Our board of directors, or a committee appointed by our board of directors will administer our ESPP, and have full but non-exclusive authority to interpret the terms of our ESPP and determine eligibility to participate, subject to the conditions of our ESPP, as described below. We expect our compensation committee to administer our ESPP. The administrator will have full and exclusive discretionary authority to construe, interpret, and apply the terms of the ESPP, to delegate ministerial duties to any of our employees, to designate separate offerings

under the ESPP, to designate our subsidiaries and affiliates as participating in the 423 Component or Non-423 Component of the ESPP, to determine eligibility, to adjudicate all disputed claims filed under the ESPP and to establish procedures that it deems necessary or advisable for the administration of the ESPP, including, but not limited to, adopting such procedures, sub-plans, and appendices to the enrollment agreement as are necessary or appropriate to permit participation in the ESPP by employees who are foreign nationals or employed outside the U.S. Unless otherwise determined, employees eligible to participate in each sub-plan will participate in a separate offering or in the Non-423 Component. The administrator's findings, decisions, and determinations are final and binding on all participants to the full extent permitted by law.

Eligibility. Unless otherwise determined by the administrator with respect to the Non-423 Component if required by applicable laws, all of our employees will be eligible to participate if they are customarily employed by us, or any participating subsidiary, for at least 20 hours per week and more than five months in any calendar year. The administrator, in its discretion, prior to an enrollment date for all options granted on such enrollment date in an offering, may determine that an employee who (i) has not completed at least two years of service (or a lesser period of time determined by the administrator) since his or her last hire date, (ii) customarily works not more than 20 hours per week (or a lesser period of time determined by the administrator), (iii) customarily works not more than five months per calendar year (or a lesser period of time determined by the administrator), (iv) is a highly compensated employee within the meaning of Section 414(q) of the Code, and (v) is a highly compensated employee within the meaning of Section 414(q) of the Code with compensation above a certain level or is an officer or subject to disclosure requirements under Section 16(a) of the Exchange Act, is or is not eligible to participate in such offering period.

However, an employee may not be granted rights to purchase shares of our common stock under our ESPP if such employee:

- immediately after the grant would own capital stock possessing 5% or more of the total combined voting power or value of all classes of our capital stock; or
- hold rights to purchase shares of our common stock under all of our employee stock purchase plans that accrue at a rate that exceeds $25,000 worth of shares of our common stock for each calendar year.

Offering periods; purchase periods. Our ESPP includes a component that allows us to make offerings intended to qualify under Section 423 of the Code and a component that allows us to make offerings not intended to qualify under Section 423 of the Code to designated companies, as described in our ESPP. Our ESPP provides for consecutive six-month offering periods. The offering periods are scheduled to start on the first trading day on or after May 15th and November 15th of each year, except for the first offering period, which will commence on the effective date of the registration statement of which this prospectus forms a part and will end on the first trading day on or before May 15, 2020, and the second offering period, which will commence on the first trading day on or after May 15, 2020. The administrator is authorized to change the duration of offering periods and purchase periods, including the starting and ending dates of offering periods and purchase periods, provided that no offering period may have a duration exceeding 27 months. If the fair market value of our common stock on the exercise date is less than the fair market value on the first trading day of the offering period, participants will be withdrawn from the current offering period following their purchase of shares on the purchase date and automatically will be enrolled in a new offering period.

Contributions. Our ESPP permits participants to purchase shares of our common stock through contributions (in the form of payroll deductions or otherwise to the extent permitted by the administrator) of up to 15% of their eligible compensation. A participant may purchase a maximum of 3,000 shares of our common stock during a purchase period.

Exercise of purchase right. Amounts deducted and accumulated by the participant during any offering period will be used to purchase shares of our common stock at the end of each purchase period established by our board of directors. The purchase price of the shares will be 85% of the lower of the fair market value of our common stock on the first trading day of each offering period or on the exercise date. Participants may end their participation at any time during an offering period and will be paid their accrued contributions that have not yet been used to purchase shares of our common stock. Participation ends automatically upon termination of employment with us.

Table of Contents

Index to Financial Statements

Non-transferability. A participant may not transfer rights granted under our ESPP. If our compensation committee permits the transfer of rights, it may only be done by will, the laws of descent and distribution, or as otherwise provided under our ESPP. A participant may not transfer the shares acquired under the ESPP until the day after the six month anniversary of the day such shares were purchased.

Certain adjustments. In the event of certain changes in our capitalization as set forth in our ESPP, to prevent diminution or enlargement of the benefits or potential benefits available under our ESPP, the administrator will adjust the number and class of shares that may be delivered under our ESPP and/or the number, class and price of shares covered by each outstanding award, and the numerical share limits set forth in our ESPP.

Dissolution or liquidation. In the event of our proposed liquidation or dissolution, the offering period then in progress will be shortened, and a new exercise date occurring before the date of the proposed dissolution or liquidation, unless otherwise provided by the administrator. The administrator will notify each participant that the exercise date has been changed and that the participant's option will be exercised automatically on the new exercise date unless prior to such date the participant has withdrawn from the offering period.

Merger or change in control. Our ESPP provides that in the event of a merger or change in control, as defined under our ESPP, a successor corporation may assume or substitute each outstanding purchase right. If the successor corporation refuses to assume or substitute for the outstanding purchase right, the offering period then in progress will be shortened, and a new exercise date will be set that will be before the date of the proposed merger or change in control. The administrator will notify each participant that the exercise date has been changed and that the participant's option will be exercised automatically on the new exercise date unless prior to such date the participant has withdrawn from the offering period.

Amendment; termination. The administrator has the authority to amend, suspend, or terminate our ESPP, subject to certain exceptions described in our ESPP. Our ESPP automatically will terminate in 2039, unless we terminate it sooner.

Executive Incentive Compensation Plan

In August 2019, our board of directors adopted an Executive Incentive Compensation Plan (the Bonus Plan). The Bonus Plan will be administered by a committee appointed by our board of directors. Unless and until our board of directors determines otherwise, our compensation committee will be the administrator of the Bonus Plan. The Bonus Plan allows our compensation committee to provide cash incentive awards to selected employees, including our named executive officers, determined by our compensation committee, based upon performance goals established by our compensation committee. Our compensation committee, in its sole discretion, will establish a target award for each participant under the Bonus Plan, which may be expressed as a percentage of the participant's average annual base salary for the applicable performance period, a fixed dollar amount, or such other amount or based on such other formula as our compensation committee determines to be appropriate.

Under the Bonus Plan, our compensation committee will determine the performance goals applicable to awards, which goals may include, without limitation: (i) research and development, (ii) regulatory milestones or regulatory-related goals, (iii) gross margin, (iv) financial milestones, (v) new product or business development, (vi) operating margin, (vii) product release timelines or other product release milestones, (viii) publications, (ix) cash flow, (x) cash position, (xi) procurement, (xii) savings, (xiii) internal structure, (xiv) leadership development, (xv) project, function or portfolio-specific milestones, (xvi) partnering, license or research collaboration agreements, (xvii) capital raising, (xviii) initial public offering preparations, (xix) patentability, (xx) revenue, (xxi) revenue growth, (xxii) stock price and (xxiii) individual objectives such as peer reviews or other subjective or objective criteria. As determined by our compensation committee, the performance goals may be based on GAAP or non-GAAP results and any actual results may be adjusted by our compensation committee for one-time items or unbudgeted or unexpected items and/or payments of actual awards under the Bonus Plan when determining whether the performance goals have been met. The goals may be on the basis of any factors our compensation committee determines relevant, and may be on an individual, divisional, business unit, segment or company-wide basis. Any criteria used may be measured on such basis as our compensation committee determines. The performance goals may differ from participant to participant and from award to award. Our compensation committee also may determine that a target award or a portion thereof will not have a performance goal associated with it but instead will be granted (if at all) in the compensation committee's sole discretion.

Table of Contents

Index to Financial Statements

401(k) Plan

We maintain a tax-qualified 401(k) retirement plan for all U.S. employees who satisfy certain eligibility requirements, including requirements relating to age and length of service. Under our 401(k) plan, employees may elect to defer up to all eligible compensation, subject to applicable annual Internal Revenue Code limits. We intend for our 401(k) plan to qualify under Section 401(a) and 501(a) of the Code so that contributions by employees to our 401(k) plan, and income earned on those contributions, are not taxable to employees until withdrawn from our 401(k) plan. The 401(k) plan also permits contributions to be made on a post-tax basis for those employees participating in the Roth 401(k) plan component.

Rule 10b5-1 Sales Plans

Our directors and officers may adopt written plans, known as Rule 10b5-1 plans, in which they will contract with a broker to buy or sell shares of our common stock on a periodic basis. Under a Rule 10b5-1 plan, a broker executes trades under parameters established by the director or officer when entering into the plan, without further direction from them. The director or officer may amend a Rule 10b5-1 plan in some circumstances and may terminate a plan at any time. Our directors and executive officers may also buy or sell additional shares outside of a Rule 10b5-1 plan when they do not possess of material nonpublic information, subject to compliance with the terms of our insider trading policy.

Limitation on Liability and Indemnification of Directors and Officers

Our amended and restated certificate of incorporation, which will be in effect upon the completion of this offering, will contain provisions that limit the liability of our current and former directors for monetary damages to the fullest extent permitted by Delaware law. Delaware law provides that directors of a corporation will not be personally liable for monetary damages for any breach of fiduciary duties as directors, except liability for:

- any breach of the director's duty of loyalty to the corporation or its 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; or
- any transaction from which the director derived an improper personal benefit.

Such limitation of liability does not apply to liabilities arising under federal securities laws and does not affect the availability of equitable remedies such as injunctive relief or rescission.

Our amended and restated certificate of incorporation will authorize us to indemnify our directors, officers, employees and other agents to the fullest extent permitted by Delaware law. Our amended and restated bylaws, which will be in effect upon the completion of this offering, will provide that we are required to indemnify our directors and officers to the fullest extent permitted by Delaware law and may indemnify our other employees and agents. Our amended and restated bylaws will also provide that, upon satisfaction of certain conditions, we will 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 the provisions of 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 certain exceptions, these agreements provide for indemnification for related expenses including attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We believe that our amended and restated certificate of incorporation, our amended and restated bylaw provisions and these indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain customary directors' and officers' liability insurance.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and our amended and restated bylaws may discourage stockholders from bringing a lawsuit against our directors 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 other stockholders. Further, a stockholder's

Table of Contents

Index to Financial Statements

investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and officers as required by these indemnification provisions.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, executive officers or persons controlling us, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Table of Contents

Index to Financial Statements

CERTAIN RELATIONSHIPS AND RELATED PARTY AND OTHER TRANSACTIONS

The following is a summary of transactions since January 1, 2016 to which we have been a participant, in which:

- the amount 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 any immediate family member of the foregoing persons (related persons), had or will have a direct or indirect material interest, other than compensation and other arrangements that are described under the section titled “Executive Compensation” or that were approved by our compensation committee.

We believe the terms obtained or consideration that we paid or received, as applicable, in connection with the transactions described below were comparable to terms available or the amounts that would be paid or received, as applicable in arm’s-length transactions.

From December 2017, when we established our Danish holding company structure, until December 2018, IGM Biosciences A/S (Holdco), our Danish holding company, held all of our outstanding equity interests. From December 2018 through the dissolution of Holdco in April 2019, Holdco held 98.6% of our outstanding equity interests, with the balance held primarily by certain of our employees.

The related party transaction disclosures included below reflect transactions between Holdco and related parties from December 2017 to April 2019, the interim period when the holding company structure was in place. For all other times, it includes transactions between us and related parties. We have not reflected any of the intercompany transactions between us and Holdco as related party transactions in this section.

Loans

Since December 2017, Haldor Topsøe Holding A/S (HTH), who is our majority stockholder, has made loans to us pursuant to unsecured promissory notes in the aggregate amount of $37.3 million, $17.3 million of which converted into shares of our Series B convertible preferred stock in the Series B Preferred Stock Transactions described below and $20.0 million of which converted into shares of our Series C convertible preferred stock in the Series C Preferred Stock Transactions described below. The notes bore interest at 3.6% per annum or less, and had short-term or unstated maturity dates. We accrued immaterial amounts of interest under these loans in 2017 and 2018. The largest loan balance outstanding was $20.0 million and the balance of the existing loans immediately prior to conversion was $20.0 million.

Sales of Securities

Series B Preferred Stock Transactions

From February 2016 through October 2018, we issued and sold an aggregate of 5,833,061 shares of our Series B convertible preferred stock at a purchase price of $6.61 per share for an aggregate purchase price of approximately $38.5 million.

The following table summarizes purchases of our Series B convertible preferred stock by related persons.

INVESTOR	SHARES OF SERIES B PREFERRED STOCK	TOTAL PURCHASE PRICE ($)
Haldor Topsøe Holding A/S (1)	5,815,205	38,429,214
Michael Loberg, Ph.D. (2)	4,539	30,000

(1) HTH holds a majority of our capital stock. Ms. Christina Teng Topsøe and Mr. Jakob Haldor Topsøe, each a member of our board of directors, are members of the board of directors of HTH and are affiliated with HTH.

(2) Dr. Michael Loberg is a member of our board of directors.

Table of Contents

Index to Financial Statements

Series C Preferred Stock Transactions

In June 2019 and July 2019, we issued and sold an aggregate of 7,717,446 shares of our Series C convertible preferred stock at a purchase price of $13.22 per share for an aggregate purchase price of approximately $102.0 million, which included $20.0 million in settlement of indebtedness. The following table summarizes purchases of our Series C convertible preferred stock by related persons.

INVESTOR	SHARES OF SERIES C PREFERRED STOCK	TOTAL PURCHASE PRICE ($)
Entities affiliated with Baker Bros. Advisors LP (1)	2,269,837	30,000,000
Haldor Topsøe Holding A/S (2)	2,269,838	30,000,000
Entities for which Janus Capital Management, LLC is an investment advisor (3)	1,134,919	15,000,000
Entities affiliated with Redmile Group, LLC (4)	1,891,530	25,000,000

(1) Entities affiliated with Baker Bros. Advisors LP holding our securities whose shares are aggregated for purposes of reporting share ownership information include Baker Brothers Life Sciences L.P. and 667, L.P. Dr. Kelvin Neu, a member of our board of directors, is an employee of Baker Bros. Advisors LP.

(2) HTH holds a majority of our capital stock. Ms. Christina Teng Topsøe and Mr. Jakob Haldor Topsøe, each a member of our board of directors, are members of the board of directors of HTH and are affiliated with HTH. Total purchase price paid by HTH includes $20.0 million in settlement of indebtedness.

(3) Janus Capital Management LLC (Janus Capital) is an independent investment advisor registered under the Investment Advisers Act of 1940. Shares held by entities for whom Janus Capital is the investment advisor and who are holding our securities are aggregated for purposes of reporting share ownership information, including Janus Henderson Global Life Sciences Fund and Janus Henderson Capital Funds plc on behalf of its series Janus Henderson Global Life Sciences Fund (together, Janus Henderson).

(4) Entities affiliated with Redmile Group, LLC holding our securities whose shares are aggregated for purposes of reporting share ownership information include Redmile Biopharma Investments II, L.P., RAF, L.P. and Redmile Strategic Master Fund, LP. Mr. Michael Lee, a member of our board of directors, is a Co-Founder and Portfolio Manager at Redmile Group, LLC.

Aspects of Our Preferred Stock

Each share of our convertible preferred stock will automatically convert into one share of our common stock or our non-voting common stock, as applicable, immediately prior to the completion of this offering. All purchasers of our convertible preferred stock are entitled to specified registration rights. See the section titled “Description of Capital Stock—Registration Rights” for more information regarding these registration rights.

Agreements with Haldor Topsøe Holding A/S

Guarantee Arrangements

In February 2017, HTH, our majority stockholder, entered into an agreement to lend its credit and creditworthiness to us by providing a guarantee to allow us to enter into our February 2017 lease agreement for our office space in Mountain View, California in exchange for a guarantee commission of 1.5% per annum of the outstanding balance of the drawdowns on the letter of credit related to this lease. To date, no amounts have been drawn on the letter of credit and, therefore, we have paid no commissions to HTH under this arrangement.

In February 2019, HTH agreed to provide a guarantee to secure a standing letter of credit related to our February 2019 lease agreement for our office, laboratory and manufacturing space in Mountain View, California. HTH receives a guarantee commission of 1.5% per annum of the outstanding balance of any amounts drawn on the letter of credit. To date, no amounts have been drawn on the letter of credit and, therefore, we have paid no commissions to HTH under this arrangement.

Nominating Agreements

On June 28, 2019, we entered into Nominating Agreements with each of HTH, Baker Brothers and Redmile to provide certain rights with respect to their ability to designate members of our board of directors. See the section titled “Management—Board Composition” for additional information regarding the Nominating Agreements.

Investors’ Rights Agreement

We are party to an investors’ rights agreement, as amended, with certain holders of our capital stock, including HTH, Baker Brothers, Redmile and Janus Henderson. Under our investors’ rights agreement, certain holders of our capital

stock have the right to demand that we file a registration statement or request that their shares of our capital stock be covered by a registration statement that we are otherwise filing. See the section titled “Description of Capital Stock—Registration Rights” for additional information regarding these registration rights.

Indemnification Agreements

Our amended and restated certificate of incorporation, which will be in effect upon the completion of this offering, will contain provisions limiting the liability of the members of our board of directors, and our amended and restated bylaws, which will be in effect upon the completion of this offering, will provide that we will indemnify each of our officers and the members of our board of directors to the fullest extent permitted under Delaware law. Our amended and restated certificate of incorporation and amended and restated bylaws will also provide our board of directors with discretion to indemnify our employees and other agents when it determines to be appropriate. In addition, we have entered into or will enter into an indemnification agreement with each of our executive officers and the members of our board of directors requiring us to indemnify them. See the section titled “Executive Compensation—Limitation on Liability and Indemnification of Directors and Officers.”

Participation in this Offering

Certain of our directors and existing stockholders, including certain stockholders affiliated with our directors and that beneficially own more than 5% of our outstanding capital stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price.

Related Party Transaction Policy

Our audit committee will have the primary responsibility for reviewing and approving or disapproving “related party transactions,” which are transactions between us and related persons in which the aggregate amount involved exceeds or may be expected to exceed $120,000 and in which a related person has or will have a direct or indirect material interest. The charter of our audit committee will provide that our audit committee shall review and approve in advance any related party transaction.

We have adopted a formal written policy, which became effective upon the effectiveness of the registration statement of which this prospectus forms a part, providing that we are not permitted to enter into any transaction that exceeds $120,000 and in which any related person has a direct or indirect material interest without the consent of our audit committee. In approving or rejecting any such transaction, our audit committee is to consider the relevant facts and circumstances available and deemed relevant to our audit committee, including whether the transaction is on terms no less favorable than terms generally available to an unaffiliated third party under the same or similar circumstances and the extent of the related person’s interest in the transaction.

Table of Contents

Index to Financial Statements

PRINCIPAL STOCKHOLDERS

The following table sets forth information with respect to the beneficial ownership of our shares as of August 31, 2019 by:

- each of our named executive officers;
- each of the members of our board of directors;
- each person or entity known by us to own beneficially more than 5% of our common stock and non-voting common stock; and
- all of our executive officers and directors as a group.

We have determined beneficial ownership in accordance with the rules and regulations of the SEC, and the information is not necessarily indicative of beneficial ownership for any other purpose. Except as indicated by the footnotes below, we believe, based on information furnished to us, that the persons and entities named in the table below have sole voting and sole investment power with respect to all shares that they beneficially own, subject to applicable community property laws.

Certain of our directors and existing stockholders, including certain stockholders affiliated with our directors and that beneficially own more than 5% of our outstanding capital common stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price. The following table does not reflect the purchase of any shares in this offering by these directors and stockholders.

Table of Contents

Index to Financial Statements

Applicable percentage of shares beneficially owned before the offering is based on 11,526,569 shares of common stock and 6,431,205 shares of non-voting common stock outstanding as of August 31, 2019 assuming the automatic conversion of 10,787,861 outstanding shares of convertible preferred stock into an aggregate of 10,787,861 shares of common stock and 6,431,205 outstanding shares of convertible preferred stock held by Baker Brothers, Redmile and HTH into an aggregate of 6,431,205 shares of non-voting common stock immediately prior to the completion of this offering. The applicable percentage of shares beneficially owned after the offering is based on the sale of 10,937,500 shares of common stock issued in the offering. In computing the number of shares beneficially owned by a person and the percentage ownership of such person, we deemed to be outstanding all shares subject to stock options held by the person that are currently exercisable, or that are exercisable within 60 days of August 31, 2019. However, except as described above, we did not deem such shares outstanding for the purpose 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, the address of each beneficial owner named in the table below and footnotes is c/o IGM Biosciences, Inc., 325 E. Middlefield Road, Mountain View, California 94043.

	BENEFICIAL OWNERSHIP BEFORE THE OFFERING					BENEFICIAL OWNERSHIP AFTER THE OFFERING				
	VOTING COMMON STOCK		NON-VOTING COMMON STOCK		% OF TOTAL OUTSTANDING CAPITAL STOCK BEFORE THE OFFERING	VOTING COMMON STOCK		NON-VOTING COMMON STOCK		% OF TOTAL OUTSTANDING CAPITAL STOCK AFTER THE OFFERING
NAME OF BENEFICIAL OWNER	SHARES	%	SHARES	%		SHARES	%	SHARES	%	
5% or Greater Stockholders:										
Haldor Topsøe Holding A/S [1]	9,039,453	78.4	2,269,838	35.3	63.0	9,039,453	40.2	2,269,838	35.3	39.1
Entities affiliated with Baker Bros. Advisors LP [2]	—	—	2,269,837	35.3	12.6	—	—	2,269,837	35.3	7.9
Entities affiliated with Redmile Group, LLC [3]	—	—	1,891,530	29.4	10.5	—	—	1,891,530	29.4	6.5
Entities for whom Janus Capital Management, LLC is investment advisor [4]	1,134,919	9.8	—	—	6.3	1,134,919	5.1	—	—	3.9
Named Executive Officers:										
Fred Schwarzer [5]	340,168	2.9	—	—	1.9	340,168	1.5	—	—	1.2
Daniel Chen, M.D., Ph.D. [6]	221,835	1.9	—	—	1.2	221,835	1.0	—	—	*
Bruce Keyt, Ph.D. [7]	256,268	2.2	—	—	1.4	256,268	1.1	—	—	*
Non-Employee Directors:										
M. Kathleen Behrens, Ph.D.	—	—	—	—	—	—	—	—	—	—
Julie Hambleton, M.D. [8]	4,098	*	—	—	*	4,098	*	—	—	*
Michael Lee [3]	—	—	1,891,530	29.4	10.5	—	—	1,891,530	29.4	6.5
Michael Loberg, Ph.D. [9]	34,803	*	—	—	*	34,803	*	—	—	*
Kelvin Neu, M.D. [2]	—	—	2,269,837	35.3	12.6	—	—	2,269,837	35.3	7.9
William Strohl, Ph.D. [10]	4,098	*	—	—	*	4,098	*	—	—	*
Christina Teng Topsøe [1]	9,039,453	78.4	2,269,838	35.3	63.0	9,039,453	40.2	2,269,838	35.3	39.1
Jakob Haldor Topsøe [1]	9,039,453	78.4	2,269,838	35.3	63.0	9,039,453	40.2	2,269,838	35.3	39.1
All current directors and executive officers as a group (twelve persons) [11]	9,900,723	82.2	6,431,205	100.0	90.9	9,900,723	43.1	6,431,205	100.0	56.5

Table of Contents

Index to Financial Statements

* Represents beneficial ownership of less than 1%.

(1) Consists of 9,039,453 shares of our common stock and 2,269,838 shares of our non-voting common stock held of record by Haldor Topsøe Holding A/S (HTH). All shares are held directly by HTH. Mr. Jakob Haldor Topsøe, Ms. Christina Teng Topsøe, Mr. Martin Topsøe and Mr. Emil Øigaard, members of the board of directors of HTH, may be deemed to share voting and investment power with respect to the shares reported herein and disclaim beneficial ownership of such shares, except to the extent of his or her pecuniary interest therein, if any. Mr. Jakob Haldor Topsøe and Ms. Christina Teng Topsøe are members of our board of directors. The address of HTH is Haldor Topsøes Allé 1, 2800 Kgs. Lyngby, Denmark.

(2) Consists of (i) 187,942 shares of non-voting common stock held by 667, L.P. (667) and (ii) 2,081,895 shares of non-voting common stock held by Baker Brothers Life Sciences, L.P. (Life Sciences, and together with 667, the BBA Funds). Baker Bros. Advisors LP (BBA) is the management company and investment adviser to the BBA Funds and has the sole voting and investment power with respect to the shares held by the BBA Funds. Baker Bros. Advisors (GP) LLC (BBA-GP) is the sole general partner of BBA. The managing members of BBA-GP are Julian C. Baker and Felix J. Baker. Dr. Kelvin Neu, M.D., a member of our board of directors, is an employee of BBA. The address for BBA, BBA-GP and the BBA Funds is 860 Washington Street, 3rd Floor, New York, NY 10014. shares reported herein and disclaim beneficial ownership of such shares, except to the extent of his pecuniary interest therein, if any. Dr. Neu is a member of our board of directors and an employee of Baker Bros. Advisors LP. The address of the entities listed herein is 860 Washington Street, 3rd Floor, New York, NY 10014.

(3) Consists of (i) 84,850 shares of our non-voting common stock held of record by Redmile Strategic Master Fund, LP, (ii) 1,513,225 shares of our non-voting common stock held of record by Redmile Biopharma Investments II, L.P. and (iii) 293,455 shares of our non-voting common stock held of record by RAF, L.P. Redmile Group, LLC is the investment manager/adviser to each of the private investment vehicles listed in items (i)-(iii) (collectively, the Redmile Affiliates) and, in such capacity, exercises sole voting and investment power over all of the shares held by the Redmile Affiliates and may be deemed to be the beneficial owner of these shares. Jeremy C. Green serves as the managing member of Redmile Group, LLC and also may be deemed to be the beneficial owner of these shares. Redmile Group, LLC, Mr. Green and Mr. Lee each disclaim beneficial ownership of these shares, except to the extent of its or his pecuniary interest in such shares, if any. Mr. Lee is a member of our board of directors and a Co-Founder and Portfolio Manager of Redmile Group, LLC.

(4) Consists of (i) 700,647 shares of our common stock held of record by Janus Henderson Global Life Sciences Fund and (ii) 434,272 shares held of record by Janus Henderson Capital Funds plc on behalf of its series Janus Henderson Global Life Sciences Fund (together, the Janus Funds). Janus Capital Management, LLC, an investment advisor registered under the Investment Advisers Act of 1940 that acts as investment adviser for each of the Janus Funds, has the ability to make decisions with respect to the voting and disposition of the shares reported herein, subject to the oversight of the board of trustees or similar entity of each of the Janus Funds. For purposes of reporting requirements of the Exchange Act, Janus Capital Management LLC may be deemed to be the beneficial owner of all of the shares held by each of Janus Funds; however, Janus Capital Management LLC expressly disclaims that it is, in fact, the beneficial owner of such securities. The address of the entities listed herein is 151 Detroit Street, 4th Floor, Denver, CO 80206.

(5) Consists of (i) 196,718 shares of our common stock held of record by Mr. Schwarzer and (ii) 143,450 shares of our common stock issuable pursuant to options held by Mr. Schwarzer and exercisable within 60 days of August 31, 2019.

(6) Consists of (i) 116,518 shares of our common stock held of record by Dr. Chen, all of which are subject to forfeiture under certain circumstances, and (ii) 105,317 shares of our common stock issuable pursuant to options held by Dr. Chen and exercisable within 60 days of August 31, 2019.

(7) Consists of 256,268 shares of our common stock issuable pursuant to options held by Dr. Keyt and exercisable within 60 days of August 31, 2019.

(8) Consists of 4,098 shares of our common stock issuable pursuant to options held by Dr. Hambleton and exercisable within 60 days of August 31, 2019.

(9) Consists of 34,803 shares of our common stock held of record by Dr. Loberg.

(10) Consists of 4,098 shares of our common stock issuable pursuant to options held by Dr. Strohl and exercisable within 60 days of August 31, 2019.

(11) Consists of (i) 9,387,492 shares of our common stock held of record by our directors and executive officers, 116,518 of which are subject to forfeiture under certain circumstances, (ii) 6,431,205 shares of our non-voting common stock held of record by our directors and executive officers and (iii) 513,231 shares of our common stock issuable pursuant to options held by our directors and executive officers and exercisable within 60 days of August 31, 2019.

Table of Contents

Index to Financial Statements

DESCRIPTION OF CAPITAL STOCK

General

The following descriptions of our capital stock and certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws are summaries and are qualified by reference to the amended and restated certificate of incorporation and the amended and restated bylaws that will be in effect upon completion of this offering. Copies of these documents were filed with the SEC as exhibits to our registration statement, of which this prospectus forms a part. The descriptions of the common stock, non-voting common stock and preferred stock reflect changes to our capital structure that will occur upon the completion of this offering.

Immediately prior to the completion of this offering and the filing of our amended and restated certificate of incorporation to be effective upon completion of this offering, our authorized capital stock will consist of 1,206,431,208 shares of capital stock, of which 1,000,000,000 shares are designated as voting common stock, par value $0.01 per share, 6,431,208 shares are designated as non-voting common stock, par value $0.01 per share, and 200,000,000 shares are designated as preferred stock, par value $0.01 per share.

Immediately prior to the completion of this offering, all the outstanding shares of our convertible preferred stock will automatically convert into an aggregate of 17,219,066 shares of our common stock and non-voting common stock.

Based on 11,523,240 shares of common stock and 6,431,205 shares of non-voting common stock outstanding as of June 30, 2019 (including 116,518 shares of restricted stock), and after giving effect to the automatic conversion of all of our outstanding convertible preferred stock (including 3,026,449 shares of Series C convertible preferred stock issued after June 30, 2019) into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock immediately prior to the completion of this offering and the issuance of 10,937,500 shares of common stock in this offering, there will be 22,460,740 shares of common stock and 6,431,205 shares of non-voting common stock outstanding upon the completion of this offering. As of June 30, 2019, we had 44 stockholders of record. As of June 30, 2019, there were 1,929,283 shares of common stock subject to outstanding options.

Common Stock and Non-Voting Common Stock

Holders of our common stock and our non-voting common stock have identical rights, provided that, (i) except as otherwise expressly provided in our amended and restated certificate of incorporation or as required by applicable law, on any matter that is submitted to a vote by our stockholders, holders of our common stock are entitled to one vote per share of common stock, and holders of our non-voting common stock are not entitled to any votes per share of non-voting common stock, including for the election of directors, and (ii) holders of our common stock have no conversion rights, while holders of our non-voting common stock shall have the right to convert each share of our non-voting common stock into one share of common stock at such holder's election, provided that as a result of such conversion, such holder, together with its affiliates and any members of a Schedule 13(d) group with such holder, would not beneficially own in excess of 4.99% of our common stock immediately prior to and following such conversion, unless otherwise as expressly provided for in our amended and restated certificate of incorporation. However, this ownership limitation may be increased or decreased to any other percentage designated by such holder of non-voting common stock upon 61 days' notice to us.

Subject to preferences that may be applicable to any then outstanding preferred stock, holders of our common stock and non-voting common stock are entitled to receive ratably those dividends, if any, as may be declared by the board of directors out of legally available funds. In the event of our liquidation, dissolution or winding up, the holders of our common stock and non-voting common stock will be entitled to share ratably in the assets legally available for distribution to stockholders after the payment of or provision for all of our debts and other liabilities, subject to the prior rights of any preferred stock then outstanding. Holders of our common stock and non-voting common stock have no preemptive rights or other subscription rights and there are no redemption or sinking funds provisions applicable to our common stock and non-voting common stock. All outstanding shares of our common stock and non-voting common stock are, and the common stock and non-voting common stock to be outstanding immediately prior to the completion of this offering will be, duly authorized, validly issued, fully paid and nonassessable. The rights, preferences and privileges of holders of our common stock and non-voting common stock are subject to and

may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Voting Rights

Our certificate of incorporation and bylaws to be in effect upon the completion of this offering do not provide for cumulative voting rights. Because of this, the holders of a plurality of the shares of our common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they should so choose. With respect to matters other than the election of directors, at any meeting of the stockholders at which a quorum is present or represented, the affirmative vote of a majority of the voting power of the shares present in person or represented by proxy at such meeting and entitled to vote on the subject matter shall be the act of the stockholders, except as otherwise required by law. The holders of a majority of the stock issued and outstanding and entitled to vote, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders.

Dividends

Subject to preferences that may apply to any outstanding shares of convertible preferred stock, holders of our common stock and our non-voting common stock are entitled to receive dividends, if any, that our board of directors may declare from time to time out of funds legally available for that purpose on a non-cumulative basis and shared ratably.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock and our non-voting 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, subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of convertible preferred stock.

Rights and Preferences

Holders of our common stock and our non-voting common stock have no preemptive, conversion or subscription 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 and our non-voting common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of convertible preferred stock that we may designate and issue in the future.

Preferred Stock

Upon the completion of this offering, our board of directors will have the authority, without further action by the stockholders, to issue up to 200,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of 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 liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing change in our control or other corporate action. Upon the completion of this offering, no shares of preferred stock will be outstanding, and we have no present plan to issue any shares of preferred stock.

Stock Options

As of June 30, 2019, 1,929,283 shares of common stock were issuable upon the exercise of outstanding stock options, with a weighted-average exercise price of $1.25 per share, under our 2010 Plan and 2018 Plan. For additional information regarding terms of our equity incentive plans, see the section titled “Executive Compensation—Equity, Benefit and Retirement Plans.”

Registration Rights

We are party to an amended and restated investors’ rights agreement that provides that certain holders of our convertible preferred stock have certain registration rights as set forth below. The registration of shares of our common stock by the exercise of registration rights described below would enable the holders to sell these shares

without restriction under the Securities Act when the applicable registration statement is declared effective. Generally, 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.

Demand Registration Rights

After this offering, the holders of an aggregate of 17,494,123 shares of our common stock (including common stock issuable upon conversion to non-voting common stock) will be entitled to certain demand registration rights. At any time beginning 180 days after the completion of this offering and before the 5 year anniversary of the date of the investor rights agreement, the holders of at least 72% of these shares in the aggregate may, on not more than two occasions, request that we register all or a portion of their shares. Such request for registration must cover shares with an anticipated aggregate offering price, net of underwriting discounts and expenses, of at least $10.0 million.

Piggyback Registration Rights

In connection with this offering, the holders of an aggregate of 17,494,123 shares of our common stock (including common stock issuable upon conversion to non-voting common stock) were entitled to, and the necessary percentage of holders waived, their rights to notice of this offering and to include their shares of registrable securities in this offering. After this offering, in the event that we propose to register any of our securities under the Securities Act, either for our own account or for the account of other security holders, the holders of these shares will be entitled to certain piggyback registration rights allowing the holder 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, the holders of these shares are entitled to notice of the registration and have the right to include their shares in the registration, subject to limitations that the underwriters may impose on the number of shares included in the offering.

S-3 Registration Rights

After this offering, the holders of an aggregate of 17,494,123 shares of our common stock (including common stock issuable upon conversion to non-voting common stock) will be entitled to certain Form S-3 registration rights. The holders of these shares can make a request that we register their shares on Form S-3 if we are qualified to file a registration statement on Form S-3 and if the reasonably anticipated aggregate gross proceeds of the shares offered would equal or exceed $5,000,000. We will not be required to effect more than two registrations on Form S-3 within any consecutive 12-month period.

Indemnification

Our amended and restated investors' rights agreement contains customary cross-indemnification provisions, under which we are obligated to indemnify holders of registrable securities in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them.

Expenses of Registration

We will pay the registration expenses, other than underwriting discounts and commissions, of the shares registered by the demand, piggyback and Form S-3 registrations described above.

Termination of Registration Rights

The demand, piggyback and Form S-3 registration rights of a stockholder described above will expire upon a Deemed Liquidation (as defined in our amended and restated certificate of incorporation) or such time after the closing of this offering that such stockholder can sell all of its shares entitled to registration rights under Rule 144 of the Securities Act.

Registration Rights Agreement

After this offering, any holder who may be deemed to be an "affiliate" as defined under Rule 144 of the Securities Act and holds at least 756,612 shares of our common stock (including common stock issuable upon conversion of non-voting common stock) issued upon conversion of our Series C convertible preferred stock will be entitled to bind us into entering into a registration rights agreement, through which, following the expiration of the 180-day-lockup period related to this offering, these holders who enter into the agreement with us would be, subject to certain limitations, entitled to certain registration rights. These registration rights would include the right to demand that we file with the SEC a Form S-3 registration statement covering the registration of their common stock for resale, subject to certain conditions, as well as rights to be permitted one underwritten public offering per calendar year,

Table of Contents

Index to Financial Statements

but no more than three underwritten public offerings in total, to effect the sale of their common stock. This registration rights agreement would require us to pay expenses relating to such registrations and indemnify these holders against certain liabilities. Our registration obligations under this registration rights agreement would continue in effect until the earliest of (i) ten years after the date we enter into the agreement; (ii) when the applicable registrable securities have been resold by the holders pursuant to an effective registration statement; (iii) when the applicable registrable securities have been resold pursuant to Rule 144 (or other similar rule); or (iv) at any time after any of the holders of such registrable securities becomes an affiliate of the Company, when the applicable registrable securities may be resold pursuant to Rule 144 without limitations as to volume or manner of sale.

Anti-Takeover Effects of Certain Provisions of Delaware Law, Our Amended and Restated Certificate of Incorporation and Our Amended and Restated Bylaws

Certain provisions of Delaware law and certain provisions that will be included in our amended and restated certificate of incorporation and amended and restated bylaws summarized below may be deemed to have an anti-takeover effect and may delay, deter or prevent a tender offer or takeover attempt that a stockholder might consider to be in its best interests, including attempts that might result in a premium being paid over the market price for the shares held by stockholders.

Preferred Stock

Our amended and restated certificate of incorporation will contain provisions that permit our board of directors to issue, without any further vote or action by the stockholders, shares of convertible preferred stock in one or more series and, with respect to each such series, to fix the number of shares constituting the series and the designation of the series, the voting rights (if any) of the shares of the series and the powers, preferences or relative, participation, optional and other special rights, if any, and any qualifications, limitations or restrictions, of the shares of such series.

Classified Board

Our amended and restated certificate of incorporation will provide that our board of directors is divided into three classes, designated Class I, Class II and Class III. Each class will be an equal number of directors, as nearly as possible, consisting of one third of the total number of directors constituting the entire board of directors. The term of initial Class I directors shall terminate on the date of the 2020 annual meeting, the term of the initial Class II directors shall terminate on the date of the 2021 annual meeting, and the term of the initial Class III directors shall terminate on the date of the 2022 annual meeting. At each annual meeting of stockholders beginning in 2020, successors to the class of directors whose term expires at that annual meeting will be elected for a three-year term. The classification of directors, together with the limitations on removal of directors and treatment of vacancies, has the effect of making it more difficult for stockholders to change the composition of our board of directors.

Removal of Directors

Our amended and restated certificate of incorporation will provide that stockholders may only remove a director for cause by a vote of no less than a majority of the shares present in person or by proxy at the meeting and entitled to vote.

Director Vacancies

Our amended and restated certificate of incorporation will authorize only our board of directors to fill vacant directorships.

No Cumulative Voting

Our amended and restated certificate of incorporation will provide that stockholders do not have the right to cumulate votes in the election of directors.

Special Meetings of Stockholders

Our amended and restated certificate of incorporation and amended and restated bylaws will provide that, except as otherwise required by law, special meetings of the stockholders may be called only by an officer at the request of a majority of our board of directors, by the Chair of our board of directors or by our Chief Executive Officer.

Advance Notice Procedures for Director Nominations

Our amended and restated bylaws will provide that stockholders seeking to nominate candidates for election as directors at an annual or special meeting of stockholders must provide timely notice thereof in writing. To be timely,

a stockholder's notice generally will have to be delivered to and received at our principal executive offices before notice of the meeting is issued by the secretary of the company, with such notice being served not less than 90 or more than 120 days before the meeting. Although the amended and restated bylaws will not give the board of directors the power to approve or disapprove stockholder nominations of candidates to be elected at an annual meeting, the amended and restated bylaws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of the company.

Action by Written Consent

Our amended and restated certificate of incorporation and amended and restated bylaws will provide that any action to be taken by the stockholders must be effected at a duly called annual or special meeting of stockholders and may not be effected by written consent.

Amending Our Certificate of Incorporation and Bylaws

Our amended and restated certificate of incorporation may be amended or altered in any manner provided by the DGCL. Our amended and restated bylaws may be adopted, amended, altered or repealed by stockholders only upon approval of at least majority of the voting power of all the then outstanding shares of the common stock, except for any amendment of the above provisions, which would require the approval of a two-thirds majority of our then outstanding common stock. Additionally, our amended and restated certificate of incorporation will provide that our bylaws may be amended, altered or repealed by the board of directors.

Authorized But Unissued Shares

Our authorized but unissued shares of common stock and convertible preferred stock will be available for future issuances without stockholder approval, except as required by the listing standards of Nasdaq, and could be utilized for a variety of corporate purposes, including future offerings to raise additional capital, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and convertible preferred stock could render more difficult or discourage an attempt to obtain control of the company by means of a proxy contest, tender offer, merger or otherwise.

Exclusive Jurisdiction

Our amended and restated bylaws will provide that, unless we consent to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding under Delaware statutory or common law brought on our behalf, (ii) any action asserting a claim of breach of fiduciary duty, (iii) any action asserting a claim arising pursuant to the DGCL, (iv) any action regarding our amended and restated certificate of incorporation or amended and restated bylaws, or (v) any action asserting a claim against us that is governed by the internal affairs doctrine. This exclusive forum provision will not apply to any causes of action arising under the Securities Act or the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. Any person or entity purchasing or otherwise acquiring any interest in our securities shall be deemed to have notice of and consented to this provision. Although we believe these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against us or our directors and officers.

Business Combinations with Interested Stockholders

We are governed by Section 203 of the DGCL. Subject to certain exceptions, Section 203 of the DGCL prohibits a public Delaware corporation from engaging in a business combination (as defined in such section) with an "interested stockholder" (defined generally as any person who beneficially owns 15% or more of the outstanding voting stock of such corporation or any person affiliated with such person) for a period of three years following the time that such stockholder became an interested stockholder, unless (1) prior to such time the board of directors of such corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder; (2) upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of such corporation at the time the transaction commenced (excluding for purposes of determining the voting stock of such corporation outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (A) by persons who are directors and also officers of such corporation and (B) by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer); or (3) at or subsequent to such time the business combination

Table of Contents

Index to Financial Statements

is approved by the board of directors of such corporation and authorized at a meeting of stockholders (and not by written consent) by the affirmative vote of at least 66 2/3% of the outstanding voting stock of such corporation not owned by the interested stockholder.

Our amended and restated certificate of incorporation and our amended and restated bylaws will provide that we must indemnify our directors and officers to the fullest extent authorized by the DGCL. We are expressly authorized to, and do, carry directors' and officers' insurance providing coverage for our directors, officers and certain employees for some liabilities. We believe that these indemnification provisions and insurance are useful to attract and retain qualified directors and executive directors.

The limitation on liability and indemnification provisions in our certificate of incorporation and bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duty. These provisions may also have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit us and our stockholders. In addition, your investment may be adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions.

Listing

Our common stock has been approved for listing on the Nasdaq Global Select Market under the trading symbol "IGMS".

Transfer Agent and Registrar

Upon completion of this offering, the transfer agent and registrar for our common stock and our non-voting common stock will be American Stock Transfer & Trust Company, LLC. The transfer agent and registrar's address is 6201 15th Avenue, Brooklyn, New York 11219.

Table of Contents

Index to Financial Statements

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our common stock. Future sales of substantial amounts of our common stock, including shares issued upon the exercise of outstanding stock options, in the public market following this offering, or the possibility of these sales or issuances occurring, could adversely affect the prevailing market price for our common stock or impair our ability to raise equity capital.

Based on our shares outstanding as of June 30, 2019, upon the completion of this offering, a total of 28,891,945 shares of common stock and non-voting common stock will be outstanding, assuming the automatic conversion of all outstanding shares of convertible preferred stock into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock (including 3,026,449 shares of our Series C convertible preferred stock issued after June 30, 2019). Of these shares, all shares of common stock sold in this offering by us, plus any shares sold by us 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 these shares are held by "affiliates" as defined in Rule 144 under the Securities Act (Rule 144).

The remaining shares of common stock and our non-voting common stock will be, and shares of common stock subject to stock options will be upon issuance, "restricted securities" as defined in Rule 144. These restricted securities are eligible for public sale only if they are registered under the Securities Act or if they qualify for an exemption from registration under Rule 144 or Rule 701 under the Securities Act (Rule 701), which are summarized below. Restricted securities may also be sold outside of the United States to non-U.S. persons in accordance with Rule 904 of Regulation S under the Securities Act.

In addition, all of our executive officers, directors and holders of substantially all of our common stock (including shares of our non-voting common stock) and securities exercisable for or convertible into our common stock (including shares of our non-voting common stock) have agreed, or will agree, with the underwriters, subject to specific exceptions, not to sell any of our stock for at least 180 days following the date of this prospectus, subject to early release in certain circumstances as described below. As a result of these agreements and the provisions of our amended and restated investors' rights agreement described under the section titled "Description of Capital Stock—Registration Rights," subject to the provisions of Rules 144 or 701, shares will be available for sale in the public market as follows:

- beginning on the date of this prospectus, 10,937,500 shares of common stock sold in this offering will be immediately available for sale in the public market unless these shares are held by "affiliates" as defined in Rule 144; and
- beginning 181 days after the date of this prospectus, 11,523,240 additional shares of common stock and 6,431,205 shares of non-voting common stock (upon conversion to common stock) will become eligible for sale in the public market from time to time thereafter, subject in some cases to the volume and other restrictions of Rule 144, as described below.

Rule 144

In general, under Rule 144 as currently in effect, once we have been subject to public company reporting requirements of Section 13 or 15(d) of the Exchange Act for at least 90 days, an eligible stockholder is entitled to sell such shares without complying with the manner of sale, volume limitation or notice provisions of Rule 144, subject to compliance with the public information requirements of Rule 144. To be an eligible stockholder under Rule 144, such stockholder must not be deemed to have been one of our affiliates for purposes of the Securities Act at any time during the 90 days preceding a sale and must have beneficially owned the shares proposed to be sold for at least six months, including the holding period of any prior owner other than our affiliates. 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 our affiliates, then such person is entitled to sell such shares without complying with any of the requirements of Rule 144, subject to the expiration of the lock-up agreements described below.

Table of Contents

Index to Financial Statements

In general, under Rule 144, as currently in effect, our affiliates or persons selling shares on behalf of our affiliates are entitled to sell shares upon expiration of the lock-up agreements described below. Beginning 90 days after the date of this prospectus, within any three-month period, such stockholders may sell a number of shares that does not exceed the greater of:

- 1% of the number of shares of common stock then outstanding, which will equal approximately shares immediately following this offering, assuming no exercise of the underwriters' option to purchase additional shares; or
- the average weekly trading volume of our common stock during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

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 and notice requirements and to the availability of current public information about us.

Rule 701

Rule 701 generally allows a stockholder who was issued shares under a written compensatory plan or contract and who is not deemed to have been our affiliate during the immediately preceding 90 days, to sell these shares in reliance upon Rule 144, but without being required to comply with the public information, holding period, volume limitation or notice provisions of Rule 144. Rule 701 also permits our affiliates to sell their Rule 701 shares under Rule 144 without complying with the holding period requirements of Rule 144. However, all holders of Rule 701 shares are required by Rule 701 to wait until 90 days after the date of this prospectus before selling those shares under Rule 701, subject to the expiration of the lock-up agreements described below.

Form S-8 Registration Statements

We intend to file one or more registration statements on Form S-8 under the Securities Act with the SEC to register the offer and sale of shares of our common stock that are issuable under our 2010 Plan, our 2018 Plan and our ESPP. These registration statements will become effective immediately upon filing. Shares covered by these registration statements will then be eligible for sale in the public markets, subject to vesting restrictions, any applicable lock-up agreements described below and Rule 144 limitations applicable to affiliates.

Lock-Up Agreements

In connection with this offering, we, our directors, our officers and substantially all of the holders of our stock and stock options 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 (including shares of our non-voting 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 Jefferies LLC, Piper Jaffray & Co. and Stifel, Nicolaus & Company, Incorporated. See the section titled "Underwriting."

In addition to the restrictions contained in the lock-up agreements described above, we have entered into agreements with certain of our stockholders, including the investors' rights agreement and our standard form option agreement, that contain market stand-off provisions imposing restrictions on the ability of such stockholders to offer, sell or transfer our equity securities for a period of 180 days following the date of this prospectus.

Registration Rights

Upon the completion of this offering, after giving effect to the conversion of all outstanding shares of convertible preferred stock into shares of our common stock and our non-voting common stock, as applicable, the holders of 17,494,123 shares of our common stock (including common stock issuable upon conversion to non-voting common stock), or their transferees, will be entitled to certain rights with respect to the registration of their securities under the Securities Act. If the offer and sale of these shares are registered, they will be freely tradable without restriction under the Securities Act immediately upon the effectiveness of the registration. See the section titled "Description of Capital Stock—Registration Rights."

Table of Contents

Index to Financial Statements

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS OF THE OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK

The following is a summary of the material U.S. federal income tax consequences to non-U.S. holders (as defined below) of the ownership and disposition of our common stock issued pursuant to this offering. This discussion is not a complete analysis of all potential U.S. federal income tax consequences relating thereto, does not address the potential application of the Medicare contribution tax on net investment income, and does not address any tax consequences arising under any state, local or foreign tax laws, or any other U.S. federal non-income tax laws. This discussion is based on the Internal Revenue Code of 1986, as amended, or the Code, Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the Internal Revenue Service, or the IRS, all as in effect on the date of this prospectus. These authorities are subject to differing interpretations and may change, possibly retroactively, resulting in U.S. federal income tax consequences different from those discussed below. We have not requested a ruling from the IRS with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS or a court will agree with such statements and conclusions.

This discussion is limited to non-U.S. holders who purchase our common stock pursuant to this offering and who 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 of the U.S. federal income tax consequences that may be relevant to an individual holder in light of such holder's particular circumstances. This discussion also does not consider any specific facts or circumstances that may be relevant to holders subject to special rules under the U.S. federal income tax laws, including:

- certain former citizens or long-term residents of the United States;
- partnerships or other pass-through entities (and investors therein);
- "controlled foreign corporations";
- "passive foreign investment companies";
- corporations that accumulate earnings to avoid U.S. federal income tax;
- banks, financial institutions, investment funds, insurance companies, brokers, dealers or traders in securities;
- tax-exempt organizations and governmental organizations;
- tax-qualified retirement plans;
- persons subject to the alternative minimum tax;
- persons subject to special tax accounting rules under Section 451(b) of the Code;
- persons that own or have owned, actually or constructively, more than 5% of our common stock;
- persons who have elected to mark securities to market; and
- persons holding our common stock as part of a hedging or conversion transaction or straddle, or a constructive sale, or other risk reduction strategy or integrated investment.

If an entity or arrangement that is classified as a partnership for U.S. federal income tax purposes holds our common stock, the U.S. federal income tax treatment of a partner in the partnership will generally depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Partnerships holding our common stock and the partners in such partnerships are urged to consult their tax advisors about the particular U.S. federal income tax consequences to them of holding and disposing of our common stock.

THIS DISCUSSION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TAX ADVICE. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR TAX ADVISORS REGARDING THE PARTICULAR U.S. FEDERAL INCOME TAX CONSEQUENCES TO THEM OF ACQUIRING, OWNING AND DISPOSING OF OUR COMMON STOCK, AS WELL AS ANY TAX CONSEQUENCES ARISING UNDER ANY STATE, LOCAL OR FOREIGN TAX LAWS AND ANY OTHER U.S. FEDERAL TAX LAWS.

Table of Contents

Index to Financial Statements

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 not a "U.S. person" or a partnership (including any entity or arrangement 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 includable in gross income for U.S. federal income tax purposes regardless of its source; or
- a trust (1) whose administration is subject to the primary supervision of a U.S. court and which has one or more U.S. persons who have the authority to control all substantial decisions of the trust or (2) that has a valid election in effect under applicable Treasury Regulations to be treated as a U.S. person.

Distributions on Our Common Stock

As described under the section titled "Dividend Policy," we have not paid and do not intend to declare or pay any cash dividends on our capital stock in the foreseeable future. However, if we distribute cash or other 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 to the extent of the holder's tax basis in our common stock, but not below zero. Any excess will be treated as gain realized on the sale or other disposition of our common stock and will be treated as described under "—Gain On Disposition of Our Common Stock" below.

Subject to the discussion below regarding effectively connected income, backup withholding and FATCA (as defined below), dividends paid to a non-U.S. holder of our common stock generally 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. To receive the benefit of a reduced treaty rate, a non-U.S. holder must furnish us or our withholding agent with a valid IRS Form W-8BEN or IRS Form W-8BEN-E (or applicable successor form) certifying such holder's qualification for the reduced rate, and the non-U.S. holder will be required to update such forms and certifications from time to time as required by law. This certification must be provided to us or our withholding agent before the payment of dividends and must be updated periodically. If the non-U.S. holder holds our common stock through a financial institution or other agent acting on the non-U.S. holder's behalf, the non-U.S. holder will be required to provide appropriate documentation to the agent, which then will be required to provide certification to us or our withholding agent, either directly or through other intermediaries.

If dividends paid on our common stock are effectively connected with U.S. trade or business conducted by a non-U.S. holder (and are attributable to such holder's permanent establishment or fixed base in the United States if required by an applicable tax treaty), the non-U.S. holder will be exempt from U.S. federal withholding tax. To claim the exemption, the non-U.S. holder must generally furnish a valid IRS Form W-8ECI (or applicable successor form) certifying eligibility for the exemption to the applicable withholding agent.

However, any such effectively connected dividends paid on our common stock generally will be subject to U.S. federal income tax on a net income basis at the same U.S. federal income tax rates and in the same manner as if such holder were a U.S. person. A non-U.S. holder that is a foreign corporation also may be subject to an additional branch profits tax equal to 30% (or such lower rate specified by an applicable income tax treaty) of its effectively connected earnings and profits for the taxable year, as adjusted for certain items.

Non-U.S. holders that do not provide the required certification on a timely basis, but that qualify 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 any applicable income tax treaties that may provide for different rules.

Table of Contents

Index to Financial Statements

Gain on Disposition of Our Common Stock

Subject to the discussion below regarding backup withholding, a non-U.S. holder generally will not be subject to U.S. federal income tax on any gain realized on the sale or other disposition of our common stock, unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business in the United States and, if required by an applicable income tax treaty, is attributable to a permanent establishment or fixed base maintained by the non-U.S. holder in the United States;
- 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 sale or other disposition, and certain other requirements are met; or
- our common stock constitutes a "United States real property interest" by reason of our status as a United States real property holding corporation, or a USRPHC, for U.S. federal income tax purposes at any time within the shorter of the five-year period preceding the disposition or the non-U.S. holder's holding period for our common stock, and our common stock is not regularly traded on an established securities market during the calendar year in which the sale or other disposition occurs.

Determining whether we are a USRPHC depends on the fair market value of our U.S. real property interests relative to the fair market value of our other trade or business assets and our worldwide real property interests. We believe that we are not currently and we do not anticipate becoming a USRPHC for U.S. federal income tax purposes, although there can be no assurance we will not in the future become a USRPHC.

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 same U.S. federal income tax rates and in the same manner as if such holder were a U.S. person. A non-U.S. holder that is a foreign corporation also may be subject to an additional branch profits tax equal to 30% (or such lower rate specified by an applicable income tax treaty) of its effectively connected earnings and profits for the taxable year, as adjusted for certain items. Gain described in the second bullet point above will be subject to U.S. federal income tax at a flat 30% rate (or such lower rate specified by an applicable income tax treaty), but may be offset by certain U.S.-source capital losses (even though the individual is not considered a resident of the United States), provided that the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses. Gain described in the third bullet point above will generally be subject to U.S. federal income tax in the same manner as gain that is effectively connected with the conduct of a U.S. trade or business, except that the branch profits tax generally will not apply.

Non-U.S. holders should consult their tax advisors regarding any applicable income tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Annual reports are required to be filed with the IRS and provided to each non-U.S. holder indicating the amount of dividends on our common stock paid to such holder and the amount of any tax withheld with respect to those dividends. These information reporting requirements apply even if no withholding was required because the dividends were effectively connected with the holder's conduct of a U.S. trade or business, or withholding was reduced or eliminated by an applicable income tax treaty. This information also may be made available under a specific treaty or agreement with the tax authorities in the country in which the non-U.S. holder resides or is established. Backup withholding, currently at a 24% rate, generally will not apply to payments to a non-U.S. holder of dividends on or the gross proceeds of a disposition of our common stock provided the non-U.S. holder furnishes the required certification for its non-U.S. status, such as by providing a valid IRS Form W-8BEN, IRS Form W-8BEN-E or IRS Form W-8ECI (or other applicable IRS Form W-8), and or certain other requirements are met, and if the payor does not have actual knowledge, or reason to know, that the holder is a U.S. person who is not an exempt recipient.

Backup withholding is not an additional tax. If any amount is withheld under the backup withholding rules, the non-U.S. holder should consult with a U.S. tax advisor regarding the possibility of and procedure for obtaining a refund or a credit against the non-U.S. holder's U.S. federal income tax liability, if any.

Table of Contents

Index to Financial Statements

Withholding on Foreign Entities

Sections 1471 through 1474 of the Code, which are commonly referred to as FATCA, impose a U.S. federal withholding tax of 30% on certain payments made to a "foreign financial institution" (as specially defined under these rules) unless such institution enters into an agreement with the U.S. government to withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding certain U.S. account holders of such institution (which includes certain equity and debt holders of such institution, as well as certain account holders that are foreign entities with U.S. owners) or an exemption applies. FATCA also generally imposes a U.S. federal withholding tax of 30% on certain payments made to a non-financial foreign entity unless such entity certifies that it does not have any "substantial United States owners" (as defined in the Code) or provides the withholding agent a certification identifying the direct and indirect "substantial United States owners" of the entity and information with respect to such "substantial United States owners," or an exemption applies. An intergovernmental agreement between the United States and the holder's country of tax residence may modify these requirements. Under certain circumstances, a non-U.S. holder might be eligible for refunds or credits of such taxes. FATCA currently applies to dividends paid on our common stock. The U.S. Treasury Department recently released proposed regulations under FATCA which, if finalized in their present form, would eliminate the federal withholding tax of 30% applicable to gross proceeds of a sale or other disposition of our common stock, and has provided that such proposed regulations may be relied upon by taxpayers until final regulations are issued.

Prospective investors are encouraged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in our common stock.

Table of Contents

Index to Financial Statements

UNDERWRITING

Subject to the terms and conditions set forth in the underwriting agreement, dated September 17, 2019, among us and Jefferies LLC, Piper Jaffray & Co. and Stifel, Nicolaus & Company, Incorporated, as the representatives of the underwriters named below and the joint book-running managers of this offering, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the respective number of shares of common stock shown opposite its name below:

UNDERWRITER	NUMBER OF SHARES
Jefferies LLC	4,156,250
Piper Jaffray & Co.	2,734,375
Stifel, Nicolaus & Company, Incorporated	2,734,375
Guggenheim Securities, LLC	1,312,500
Total	10,937,500

The underwriting agreement provides that the obligations of the several underwriters are subject to certain conditions precedent such as the receipt by the underwriters of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriters will purchase all of the shares of common stock if any of them are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the nondefaulting underwriters may be increased or the underwriting agreement may be terminated. We have agreed to indemnify the underwriters and certain of their controlling persons against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriters may be required to make in respect of those liabilities.

Certain of our directors and existing stockholders, including certain stockholders affiliated with our directors and that beneficially own more than 5% of our outstanding capital stock, have agreed to purchase approximately 7,669,250 shares of our common stock in this offering at the initial public offering price. The underwriters will receive the same underwriting discounts and commissions on any shares purchased by these directors and stockholders as they will on any other shares sold to the public in this offering.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in the common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for the common stock, that you will be able to sell any of the common stock held by you at a particular time or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of common stock subject to their acceptance of the shares of common stock from us and subject to prior sale. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commission and Expenses

The underwriters have advised us that they propose to offer the shares of common stock to the public at the initial public offering price set forth on the cover page of this prospectus and to certain dealers, which may include the underwriters, at that price less a concession not in excess of $0.672 per share of common stock. After the offering, the initial public offering price and concession to dealers may be reduced by the representatives. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus.

Table of Contents

Index to Financial Statements

The following table shows the public offering price, the underwriting discounts and commissions that we are to pay the underwriters and the proceeds, before expenses, to us in connection with this offering. Such amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	PER SHARE		TOTAL	
	WITHOUT OPTION TO PURCHASE ADDITIONAL SHARES	WITH OPTION TO PURCHASE ADDITIONAL SHARES	WITHOUT OPTION TO PURCHASE ADDITIONAL SHARES	WITH OPTION TO PURCHASE ADDITIONAL SHARES
Public offering price	$ 16.00	$ 16.00	$ 175,000,000	$ 201,250,000
Underwriting discounts and commissions paid by us	$ 1.12	$ 1.12	$ 12,250,000	$ 14,087,500
Proceeds to us, before expenses	$ 14.88	$ 14.88	$ 162,750,000	$ 187,162,500

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately $4.2 million. We will reimburse the underwriters for their expenses related to the review of this offering by the Financial Industry Regulatory Authority, Inc. in an amount up to $40,000.

Determination of Offering Price

Prior to this offering, there has not been a public market for our common stock. Consequently, the initial public offering price for our common stock will be determined by negotiations between us and the representatives. Among the factors considered in these negotiations were the prevailing market conditions, our financial information, market valuations of other companies that we and the underwriters believe to be comparable to us, estimates of our business potential, the present state of our development and other factors deemed relevant.

We offer no assurances that the initial public offering price will correspond to the price at which the common stock will trade in the public market subsequent to the offering or that an active trading market for the common stock will develop and continue after the offering.

Listing

Our common stock has been approved for listing on the Nasdaq Global Select Market under the trading symbol "IGMS".

Stamp Taxes

If you purchase shares of common stock offered in this prospectus, you may be required to pay stamp taxes and other charges under the laws and practices of the country of purchase, in addition to the offering price listed on the cover page of this prospectus.

Option to Purchase Additional Shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase, from time to time, in whole or in part, up to an aggregate of 1,640,625 shares from us at the public offering price set forth on the cover page of this prospectus, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares proportionate to that underwriter's initial purchase commitment as indicated in the table above.

No Sales of Similar Securities

We, our officers, directors option holders and other holders of all or substantially all our outstanding capital stock and other securities have agreed, subject to specified exceptions, not to directly or indirectly:

- sell, offer, contract or grant any option to sell (including any short sale), pledge, transfer, establish an open "put equivalent position" within the meaning of Rule 16a-l(h) under the Securities Exchange Act of 1934, as amended, or

Table of Contents

Index to Financial Statements

- otherwise dispose of any shares of common stock, options or warrants to acquire shares of common stock, or securities exchangeable or exercisable for or convertible into shares of common stock currently or hereafter owned either of record or beneficially, or
- publicly announce an intention to do any of the foregoing for a period of 180 days after the date of this prospectus without the prior written consent of the representatives.

This restriction terminates after the close of trading of the common stock on and including the 180th day after the date of this prospectus.

The representatives may, in their sole discretion and at any time or from time to time before the termination of the 180-day period release all or any portion of the securities subject to lock-up agreements. There are no existing agreements between the underwriters and any of our shareholders who will execute a lock-up agreement, providing consent to the sale of shares prior to the expiration of the lock-up period.

Stabilization

The underwriters have advised us that they, pursuant to Regulation M under the Exchange Act, certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of the common stock at a level above that which might otherwise prevail in the open market. Establishing short sales positions may involve either “covered” short sales or “naked” short sales.

“Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out 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 shares through the option to purchase additional shares.

“Naked” short sales are sales in excess of the option to purchase additional shares of our common stock. The underwriters must close out any 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 shares of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of the common stock. A syndicate covering transaction is the bid for or the purchase of shares of common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriter’s purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if the common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and therefore have not been effectively placed by such syndicate member.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

The underwriters may also engage in passive market making transactions in our common stock on Nasdaq in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker’s bid, that bid must then be lowered when specified purchase limits are exceeded.

Table of Contents

Index to Financial Statements

Electronic Distribution

A prospectus in electronic format may be made available by e-mail or on the web sites or through online services maintained by one or more of the underwriters or their affiliates. In those cases, prospective investors may view offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than the prospectus in electronic format, the information on the underwriters' web sites and any information contained in any other web site maintained by any of the underwriters is not part of this prospectus, has not been approved and/or endorsed by us or the underwriters and should not be relied upon by investors.

Other Activities and Relationships

The underwriter and certain of its affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The underwriter and certain of its affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriter and certain of its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the underwriters or their respective affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriters and their respective affiliates may hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Disclaimers About Non-U.S. Jurisdictions

Canada

(A) Resale Restrictions. The distribution of shares of common stock in Canada is being made only in the provinces of Ontario, Quebec, Alberta and British Columbia on a private placement basis exempt from the requirement that we prepare and file a prospectus with the securities regulatory authorities in each province where trades of these securities are made. Any resale of the shares of common stock in Canada must be made under applicable securities laws which may vary depending on the relevant jurisdiction, and which may require resales to be made under available statutory exemptions or under a discretionary exemption granted by the applicable Canadian securities regulatory authority. Purchasers are advised to seek legal advice prior to any resale of the securities.

(B) Representations of Canadian Purchasers. By purchasing shares of common stock in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to us and the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the shares of common stock without the benefit of a prospectus qualified under those securities laws as it is an "accredited investor" as defined under National Instrument 45-106 — *Prospectus Exemptions*;
- the purchaser is a "permitted client" as defined in National Instrument 31-103 — *Registration Requirements, Exemptions and Ongoing Registrant Obligations*;
- where required by law, the purchaser is purchasing as principal and not as agent; and
- the purchaser has reviewed the text above under Resale Restrictions.

Table of Contents

Index to Financial Statements

(C) Conflicts of Interest. Canadian purchasers are hereby notified that the representatives are relying on the exemption set out in section 3A.3 or 3A.4, if applicable, of National Instrument 33-105 —*Underwriting Conflicts* from having to provide certain conflict of interest disclosure in this document.

(D) Statutory Rights of Action. Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the prospectus (including any amendment thereto) such as this document 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 of these securities in Canada 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.

(E) Enforcement of Legal Rights. All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

(F) Taxation and Eligibility for Investment. Canadian purchasers of shares of common stock should consult their own legal and tax advisors with respect to the tax consequences of an investment in the shares of common stock in their particular circumstances and about the eligibility of the shares of common stock for investment by the purchaser under relevant Canadian legislation.

Australia

This prospectus is not a disclosure document for the purposes of Australia's Corporations Act 2001 (Cth) of Australia, or Corporations Act, has not been lodged with the Australian Securities & Investments Commission and is only directed to the categories of exempt persons set out below. Accordingly, if you receive this prospectus in Australia:

You confirm and warrant that you are either:

- a "sophisticated investor" under section 708(8)(a) or (b) of the Corporations Act;
- a "sophisticated investor" under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to the Company which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;
- a person associated with the Company under section 708(12) of the Corporations Act; or
- a "professional investor" within the meaning of section 708(11)(a) or (b) of the Corporations Act.

To the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this prospectus is void and incapable of acceptance.

You warrant and agree that you will not offer any of the securities issued to you pursuant to this prospectus for resale in Australia within 12 months of those securities being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

European Economic Area

Any distributor subject to MiFID II that is offering, selling or recommending the shares of common stock is responsible for undertaking its own target market assessment in respect of the shares of common stock and determining its own distribution channels for the purposes of the MiFID product governance rules under Commission Delegated Directive (EU) 2017/593 (the Delegated Directive). Neither we nor the underwriters make any representations or warranties as to a distributor's compliance with the Delegated Directive.

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 any common shares which are the subject of the offering contemplated by this prospectus may not be made in that Relevant Member State except that an offer to the public

Table of Contents

Index to Financial Statements

in that Relevant Member State of any common shares may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- to any legal entity which is a "qualified investor" as defined in the Prospectus Directive;
- to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the underwriters or the underwriters nominated by us for any such offer; or
- in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of common shares shall require us or any of the underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Directive or supplement a prospectus pursuant to Article 16 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer common shares to the public" in relation to the common shares 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 the common shares to be offered so as to enable an investor to decide to purchase or subscribe to the common shares, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State and the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

Hong Kong

No securities have been offered or sold, and no securities may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell shares or debentures, whether as principal or agent; or to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (SFO) and any rules made under that Ordinance; or in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong (CO) or which do not constitute an offer or invitation to the public for the purpose of the CO or the SFO. No document, invitation or advertisement relating to the securities has been issued or 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 of Hong Kong (except if permitted under the securities laws of Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under that Ordinance.

This prospectus has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus may not be issued, circulated or distributed in Hong Kong, and the securities may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the securities will be required, and is deemed by the acquisition of the securities, to confirm that he is aware of the restriction on offers of the securities described in this prospectus and the relevant offering documents and that he is not acquiring, and has not been offered any securities in circumstances that contravene any such restrictions.

Israel

This document does not constitute a prospectus under the Israeli Securities Law, 5728-1968, or the Securities Law, and has not been filed with or approved by the Israel Securities Authority. In Israel, this prospectus is being distributed only to, and is directed only at, and any offer of the shares of common stock is directed only at, (i) a limited number of persons in accordance with the Israeli Securities Law and (ii) investors listed in the first addendum, or the Addendum, to the Israeli Securities Law, consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million and "qualified individuals," each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors are required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of same and agree to it.

Table of Contents

Index to Financial Statements

Japan

The offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended), or FIEL, and the Initial Purchaser will not offer or sell any securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering 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, and otherwise in compliance with, the FIEL and any other applicable laws, regulations and ministerial guidelines of Japan.

Singapore

This prospectus has not been and will not be lodged or 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 of common stock may not be circulated or distributed, nor may the shares of common stock 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 under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the SFA), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275, of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares of common stock 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; or
- a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares of common stock pursuant to an offer made under Section 275 of the SFA except:

- to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
- where no consideration is or will be given for the transfer;
- where the transfer is by operation of law;
- as specified in Section 276(7) of the SFA; or
- as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (SIX) or on any other stock exchange or regulated trading facility in Switzerland. This prospectus has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus nor any other offering or marketing material relating to the securities or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus nor any other offering or marketing material relating to the offering, the Company or the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this prospectus will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of securities.

Table of Contents

Index to Financial Statements

United Kingdom

This prospectus is only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the Order) and/or (ii) high net worth entities falling within Article 49(2)(a) to (d) of the Order and other persons to whom it may lawfully be communicated (each such person being referred to as a relevant person).

This prospectus and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

Table of Contents

Index to Financial Statements

LEGAL MATTERS

The validity of the shares of common stock being offered by this prospectus will be passed upon for us by Wilson Sonsini Goodrich & Rosati, Professional Corporation, Palo Alto, California. Certain legal matters in connection with this offering will be passed upon for the underwriters by Cooley LLP, San Francisco, California.

EXPERTS

The financial statements as of and for the years ended December 31, 2017 and December 31, 2018 included in the Prospectus, have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report appearing herein. Such financial statements are included in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We have submitted with the SEC a registration statement on Form S-1, including exhibits and schedules, under the Securities Act, with respect to the shares of common stock being offered by this prospectus. This prospectus, which constitutes part of the registration statement, does not contain all of the information in the registration statement and its exhibits. For further information with respect to us and the shares of common stock offered by this prospectus, we refer you to the registration statement and its exhibits. Statements contained in this prospectus as to the contents of any contract or any other document referred to are not necessarily complete and, in each instance, we refer you to the copy of the contract or other document filed as an exhibit to the registration statement. Each of these statements is qualified in all respects by this reference. The SEC also maintains an internet website that contains reports, proxy statements and other information about issuers, like us, that file electronically with the SEC. The address of that website is www.sec.gov.

Upon the completion of this offering, we will be subject to the information reporting requirements of the Exchange Act, and we will file reports, proxy statements and other information with the SEC. These reports, proxy statements and other information will be available for inspection and copying at the public reference room and web site of the SEC referred to above. We also maintain a website at www.igmbio.com, at which, following the completion of this offering, you may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on or accessible through our website is not a part of this prospectus, and the inclusion of our website address in this prospectus is an inactive textual reference only.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.
INDEX TO FINANCIAL STATEMENTS

Audited Financial Statements

Unaudited Financial Statements

Table of Contents

Index to Financial Statements

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of IGM Biosciences, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of IGM Biosciences, Inc. (the "Company") as of December 31, 2017 and 2018, the related statements of operations, convertible preferred stock and stockholders' deficit, 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 as of December 31, 2017 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

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. 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. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

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 included 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/ Deloitte & Touche LLP

San Francisco, California
June 28, 2019 (August 30, 2019 as to the effects of the reverse stock split as described in Note 1)

We have served as the Company's auditor since 2019.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Balance Sheets
(in thousands, except share and per share amounts)

	DECEMBER 31,	
	2017	2018
Assets		
Current assets:		
Cash and cash equivalents	$ 432	$ 1,887
Prepaid expenses and other current assets	223	485
Income tax receivable	—	35
Total current assets	655	2,407
Property and equipment, net	677	1,472
Restricted cash	50	100
Other assets	8	—
Total assets	$ 1,390	$ 3,979
Liabilities, convertible preferred stock and stockholders' deficit		
Current liabilities:		
Accounts payable	$ 225	$ 164
Accrued liabilities	507	3,582
Deferred rent	116	108
Related party loan	—	5,027
Income tax payable	128	—
Other current liabilities	—	9
Total current liabilities	976	8,890
Deferred rent, non-current	125	—
Other long-term liabilities	9	—
Total liabilities	1,110	8,890
Commitments and contingencies (Note 8)		
Convertible preferred stock, $0.01 par value; 9,501,624 authorized as of December 31, 2017 and 2018; 6,384,797 and 9,501,620 shares issued and outstanding as of December 31, 2017 and 2018, respectively; aggregate liquidation preference of $40,868 and $61,466 as of December 31, 2017 and 2018, respectively	40,783	60,917
Stockholders' deficit:		
Common stock, $0.01 par value; 30,264,511 authorized as of December 31, 2017 and 2018; 438,074 issued and outstanding, as of December 31, 2017 and 2018	4	4
Additional paid-in capital	35,479	751
Due from related party	(34,625)	(2,511)
Accumulated deficit	(41,361)	(64,072)
Total stockholders' deficit	(40,503)	(65,828)
Total liabilities, convertible preferred stock and stockholders' deficit	$ 1,390	$ 3,979

The accompanying notes are an integral part of these financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Statements of Operations
(in thousands, except share and per share amounts)

	YEAR ENDED DECEMBER 31,	
	2017	2018
Operating expenses:		
Research and development	$ 8,639	$ 18,962
General and administrative	2,508	3,829
Total operating expenses	11,147	22,791
Loss from operations	(11,147)	(22,791)
Other income, net	93	80
Net loss	$ (11,054)	$ (22,711)
Net loss per share, basic and diluted	$ (25.24)	$ (51.84)
Weighted-average common shares outstanding, basic and diluted	437,942	438,074
Pro forma net loss per share, basic and diluted (unaudited)		$ (3.07)
Pro forma weighted-average common shares outstanding, basic and diluted (unaudited)		7,395,000

The accompanying notes are an integral part of these financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Statements of Convertible Preferred Stock and Stockholders' Deficit
(in thousands, except share amounts)

	CONVERTIBLE PREFERRED STOCK		COMMON STOCK		ADDITIONAL PAID-IN CAPITAL	DUE TO (FROM) RELATED PARTY	ACCUMULATED DEFICIT	TOTAL STOCKHOLDERS' DEFICIT
	SHARES	AMOUNT	SHARES	AMOUNT				
Balance at December 31, 2016	5,238,771	$33,004	434,849	$ 4	$ 600	$ —	$ (30,307)	$ (29,703)
Issuance of Series B convertible preferred stock	1,210,580	8,000	—	—	—	—	—	—
Exercise of stock options	—	—	3,215	—	3	—	—	3
Shares repurchased and retired	(64,554)	(221)	—	—	221	—	—	221
Related party equity transaction	—	—	—	—	34,625	(34,625)	—	—
Tax resulting from related party transactions	—	—	—	—	(128)	—	—	(128)
Capital contribution from related party	—	—	—	—	65	—	—	65
Stock-based compensation expense	—	—	—	—	93	—	—	93
Net loss	—	—	—	—	—	—	(11,054)	(11,054)
Balance at December 31, 2017	6,384,797	40,783	438,074	4	35,479	(34,625)	(41,361)	(40,503)
Issuance of Series B convertible preferred stock, net of issuance costs of $0.5 million	3,116,823	20,134	—	—	(286)	(2,511)	—	(2,797)
Related party equity transaction	—	—	—	—	(34,625)	34,625	—	—
Stock-based compensation expense	—	—	—	—	183	—	—	183
Net loss	—	—	—	—	—	—	(22,711)	(22,711)
Balance at December 31, 2018	9,501,620	$60,917	438,074	$ 4	$ 751	$ (2,511)	$ (64,072)	$ (65,828)

The accompanying notes are an integral part of these financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Statements of Cash Flows
(in thousands)

	YEAR ENDED DECEMBER 31,	
	2017	2018
Operating activities		
Net loss	$(11,054)	$(22,711)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	161	278
Stock-based compensation expense	93	183
Accrued interest on related party loan	—	27
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(54)	(262)
Other assets	(8)	8
Income tax receivable	—	(35)
Accounts payable	128	(61)
Accrued liabilities	316	2,791
Income tax payable	—	(128)
Deferred rent	52	(134)
Other current liabilities	—	9
Other long-term liabilities	9	(9)
Net cash used in operating activities	(10,357)	(20,044)
Investing activities		
Purchase of property and equipment	(385)	(788)
Net cash used in investing activities	(385)	(788)
Financing activities		
Proceeds from related party for issuance of Series B convertible preferred stock	8,000	17,337
Proceeds from related party capital contribution	65	—
Proceeds from exercise of stock options	3	—
Proceeds from loan from a related party	—	5,000
Net cash provided by financing activities	8,068	22,337
Net (decrease) increase in cash, cash equivalents, and restricted cash	(2,674)	1,505
Cash, cash equivalents, and restricted cash at beginning of year	3,156	482
Cash, cash equivalents, and restricted cash at end of year	$ 482	$ 1,987
Cash, cash equivalents, and restricted cash at end of year		
Cash and cash equivalents	$ 432	$ 1,887
Restricted cash	50	100
Cash, cash equivalents, and restricted cash at end of year	$ 482	$ 1,987
Supplemental disclosure of cash flow information		
Cash paid for income taxes	$ —	$ 167
Supplemental disclosure of non-cash investing and financing activities		
Acquisition of property and equipment in accrued liabilities	$ 8	$ 292
Stock repurchase paid by related party	$ 221	$ —
Receivable from related party for Series B convertible preferred stock	$ —	$ 2,511
Related party equity transaction	$(34,625)	$ 34,625

The accompanying notes are an integral part of these financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Notes to Financial Statements

1. Organization

Organization

IGM Biosciences, Inc., (the Company), was incorporated in the state of Delaware in August 1993 under the name Palingen, Inc. and the name was subsequently changed to IGM Biosciences, Inc. in 2010. The Company's headquarters are in Mountain View, California. IGM Biosciences, Inc. is a biotechnology company engaged in the development of IgM antibody therapeutics for the treatment of cancer.

In December 2017, the Company established a holding company (Holdco); in April 2019, Holdco was subsequently dissolved and equity interests in Holdco were converted into equity interests in the Company. The information included in these financial statements is consistently presented as if it is that of the Company, even during the interim period when investors held their equity interests in Holdco. For the periods ended December 31, 2017 and 2018, Haldor Topsøe Holding A/S was the majority investor in the Company either through its direct equity ownership or indirectly as the majority owner of Holdco. Haldor Topsøe Holding A/S and Holdco represent a combined entity (Majority Investor) as referenced herein.

Basis of presentation

These financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP).

Reverse Stock Split

In August 2019, the Company filed an amendment to the Company's amended and restated certificate of incorporation to effect a reverse split of shares of the Company's common stock, non-voting common stock and convertible preferred stock, each on a 6.6084-for-1 basis (Reverse Stock Split). The Reverse Stock Split also applied to any outstanding securities or rights convertible into, or exchangeable or exercisable for, common stock, non-voting common stock or convertible preferred stock. The par value of the common stock was not adjusted as a result of the Reverse Stock Split. All references to common stock, non-voting common stock, restricted stock, options to purchase common stock, share data, per share data, convertible preferred stock and related information contained in the financial statements and related footnotes have been retrospectively adjusted to reflect the effect of the Reverse Stock Split for all periods presented. The Reverse Stock Split was effected on August 30, 2019.

Liquidity and capital resources

The Company has incurred net operating losses and negative cash flows from operations since its inception and had an accumulated deficit of $64.1 million at December 31, 2018. As of December 31, 2018, the Company had cash and cash equivalents of $1.9 million. Additionally, in June 2019, the Company entered into an agreement to issue and sell shares of its Series C convertible preferred stock through which the Company has a contractual right to receive gross proceeds of approximately $102.0 million, which includes $20.0 million in conversion of all of the amounts outstanding under an unsecured promissory note (See Note 11). Due to the additional financing, management believes that its existing financial resources are sufficient to continue operating activities at least one year past the issuance date of these financial statements. Future capital requirements will depend on many factors, including the timing and extent of spending on research and development and the market acceptance of the Company's products.

Management plans to raise additional capital through a combination of public equity or private offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing distribution arrangements. There can be no assurance that in the event the Company requires additional financing, such financing will be available at terms acceptable to us, if at all.

Failure to generate sufficient cash flows from operations, raise additional capital, and reduce discretionary spending should additional capital not become available could have a material adverse effect on the Company's ability to achieve its intended business objectives. These factors would have a material adverse effect on the Company's future financial results, financial position, and cash flows.

Table of Contents

Index to Financial Statements

2. Summary of Significant Accounting Policies

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, the Company evaluates its estimates, including, but not limited to, those related to manufacturing accruals, accrued research and development expenses, fair value of common stock, stock-based compensation, income tax uncertainties and the valuation of deferred tax assets. The Company bases its estimates on its historical experience and also on assumptions that it believes are reasonable; however, actual results could significantly differ from those estimates.

Unaudited pro forma financial information

Immediately prior to the completion of a Qualified IPO (as defined in Note 5 below) or upon the approval of the holders of at least 66 and 2/3 percent of the outstanding convertible preferred stock, all outstanding shares of convertible preferred stock will convert into common stock and non-voting common stock based on holders' election. 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 does not include the shares expected to be sold and related proceeds to be received from the Qualified IPO. The unaudited pro forma net loss per share for the year ended December 31, 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, as if such conversion had occurred at the beginning of the period, or their issuance dates, if later.

Segments

The Company operates and manages its business as one reportable and operating segment, which is the business of developing engineered IgM antibodies for the treatment of cancer patients. The Company's chief executive officer, who is the chief operating decision maker, reviews financial information on an aggregate basis for allocating and evaluating financial performance. All long-lived assets are maintained in, and all losses are attributable to, the United States of America.

Cash, cash equivalents and restricted cash

The Company considers all highly liquid investments with original maturities of three months or less from the date of purchase to be cash and cash equivalents. Cash equivalents consist primarily of amounts invested in money market accounts and are stated at fair value. Restricted cash consists of a money market account that serves as collateral for a credit card agreement at one of the Company's financial institutions.

Fair value of financial instruments

The Company's financial assets and liabilities are accounted for in accordance with Financial Accounting Standards Board (FASB), Accounting Standards Codification (ASC), *Fair Value Measurements and Disclosures* (ASC 820). ASC 820 defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The fair value hierarchy of ASC 820 requires an entity to maximize the use of observable inputs when measuring fair value and classifies those inputs into three levels:

Level 1—Observable inputs, such as quoted prices in active markets.

Level 2—Inputs, other than the quoted prices in active markets, which are observable either directly or indirectly such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the instrument's anticipated life.

Level 3—Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

The Company primarily applies the market approach for recurring fair value measurements. The carrying values of the Company's financial instruments, including cash equivalents, accounts payable and accrued liabilities approximate fair value due to the short-term nature of these items.

Concentration of credit risk and other risks and uncertainties

Financial instruments that potentially subject the Company to a concentration of credit risk, consist primarily of cash and cash equivalents including money market funds. The Company maintains bank deposits in federally

insured financial institutions and these deposits may exceed federally insured limits. The Company is exposed to credit risk in the event of default by the financial institutions holding its cash and cash equivalents to the extent recorded in the balance sheet. The Company has not experienced any losses on its deposits of cash and cash equivalents.

The Company's future results of operations involve a number of other risks and uncertainties. Factors that could affect the Company's future operating results and cause actual results to vary materially from expectations include, but are not limited to, uncertainty of results of clinical trials and reaching milestones, uncertainty of regulatory approval of the Company's potential product candidates, uncertainty of market acceptance of the Company's product candidates, competition from substitute products and larger companies, securing and protecting proprietary technology, strategic relationships and dependence on key individuals or sole source suppliers.

The Company's product candidates require approvals from the U.S. Food and Drug Administration and comparable foreign regulatory agencies prior to commercial sales in their respective jurisdictions. There can be no assurance that any product candidates will receive the necessary approvals. If the Company was denied approval, approval was delayed or the Company was unable to maintain approval for any product candidate, it could have a materially adverse impact on the Company.

Property and equipment

Property and equipment are stated at cost, less accumulated depreciation and amortization. Depreciation is determined using the straight-line method over the estimated useful lives of the respective assets, generally three to five years. Leasehold improvements are amortized using the straight-line method over the shorter of the lease term or the estimated useful economic lives of the related assets.

Upon retirement or sale of the assets, the cost and related accumulated depreciation and amortization are removed from the balance sheet and the resulting gain or loss are recorded to the statements of operations. Repairs and maintenance are charged to operations as incurred.

Impairment of long-lived assets

Long-lived assets consist of property and equipment. The Company evaluates the carrying amount of its long-lived assets whenever events or changes in circumstances indicate that the assets may not be recoverable. An impairment loss would be recognized when estimated future cash flows expected to result from the use of the asset and its eventual disposition are less than the carrying amount of the asset. There was no impairment of long-lived assets in 2017 and 2018.

Convertible preferred stock

The Company records shares of convertible preferred stock at their respective fair values on the dates of issuance, net of issuance costs. The convertible preferred stock is recorded outside of stockholders' deficit on the balance sheets because the shares contain liquidation features that are not solely within the Company's control. The Company has elected not to adjust the carrying values of the convertible preferred stock to the liquidation preferences of such shares because of the uncertainty of whether or when such an event would occur. Subsequent adjustments to increase the carrying values to the liquidation preferences will be made only when it becomes probable that such a liquidation event will occur.

Research and development expenses

The Company expenses research and developments costs as they are incurred. Research and development expenses consist primarily of: (i) personnel-related expenses, including salaries, benefits and stock-based compensation expense, for personnel in the Company's research and development functions; (ii) fees paid to third parties such as contractors, consultants and contract research organizations (CROs), for animal studies and other costs related to preclinical testing; (iii) costs related to acquiring and manufacturing research and clinical trial materials, including under agreements with third parties such as contract manufacturing organizations (CMOs), and other vendors; (iv) costs related to the preparation of regulatory submissions; (v) expenses related to laboratory supplies and services; and (vi) depreciation of equipment and facilities expenses.

Accrued research and development expenses

The Company records accruals for estimated costs of research, preclinical, and manufacturing development, which are significant components of research and development expenses. A substantial portion of the Company's ongoing

research and development activities is conducted by third-party service providers, CROs and CMOs. The Company's contracts with the CROs and CMOs generally include fees such as initiation fees, reservation fees, costs related to animal studies and safety tests, verification run costs, materials and reagents expenses, taxes, etc. The financial terms of these contracts are subject to negotiations, which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to the Company under such contracts. The Company accrues the costs incurred under agreements with these third parties based on estimates of actual work completed in accordance with the respective agreements. The Company determines the estimated costs through discussions with internal personnel and external service providers as to the progress, or stage of completion or actual timeline (start-date and end-date) of the services and the agreed-upon fees to be paid for such services. Through December 31, 2018, there have been no material differences from the Company's estimated accrued research and development expenses to actual expenses.

Patent costs

All patent-related costs incurred in connection with filing and prosecuting patent applications are expensed as incurred due to the uncertainty about the recovery of the expenditure. Amounts incurred are classified as general and administrative expenses in the accompanying statements of operations.

Stock-based compensation

The Company accounts for stock-based compensation by measuring and recognizing compensation expense for all share-based awards made to employees and directors based on estimated grant-date fair values. The Company uses the straight-line method to allocate compensation cost to reporting periods over the requisite service period, which is generally the vesting period, and estimates the fair value of share-based awards to employees and directors using the Black-Scholes option-pricing valuation model. The Company accounts for forfeitures as they occur.

Leases, rent expense, and sublease income

The Company records rent expense on a straight-line basis over the life of the lease. In cases where there is a free rent period or future fixed rent escalations, the Company records a deferred rent liability. Additionally, the receipt of any lease incentives is recorded as a deferred rent liability which is amortized over the lease term as a reduction of rent expense. Building improvements made with the lease incentives or tenant allowances are capitalized as leasehold improvements and included in property and equipment in the balance sheets. In addition, the Company subleases a portion of its office space to a third party. The Company recognizes rental income on a straight-line basis over the life of the sublease.

Income taxes

The Company accounts for income taxes using the liability method, whereby deferred tax asset and liability account balances are determined based on differences between the financial reporting and 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 provides a valuation allowance when it is more likely than not that some portion, or all of the Company's deferred tax assets will not be realized.

The Company accounts for income tax contingencies using a benefit recognition model. If it considers that a tax position is more likely than not to be sustained upon audit, based solely on the technical merits of the position, it recognizes the benefit. The Company measures the benefit by determining the amount that is greater than 50% likely of being realized upon settlement, presuming that the tax position is examined by the appropriate taxing authority that has full knowledge of all relevant information. The Company's policy is to recognize interest and penalties related to the underpayment of income taxes as a component of income tax expense or benefit. To date, there have been no interest or penalties charged in relation to the unrecognized tax benefits.

Comprehensive loss

There are no components of comprehensive loss for the Company. Thus, comprehensive loss is the same as the net loss for the periods presented.

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.

Table of Contents

Index to Financial Statements

Recent accounting pronouncements

The Company is an emerging growth company (EGC) as defined in the Jumpstart Our Business Startups Act of 2012 (JOBS Act) and may take advantage of reduced reporting requirements that are otherwise applicable to public companies. Section 107 of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies are required to comply with those standards. The Company has elected to use the extended transition period for complying with new or revised accounting standards; and as a result of this election, its financial statements may not be comparable to companies that comply with public company effective dates. The JOBS Act also exempts the Company from having to provide an auditor attestation of internal controls over financial reporting under Sarbanes-Oxley Act Section 404(b).

The Company will remain an EGC until the earliest of (i) the last day of the fiscal year in which it has total annual gross revenues of $1.07 billion or more, (ii) the last day of the fiscal year following the fifth anniversary of the completion of its IPO, (iii) the date on which it has issued more than $1.0 billion in nonconvertible debt during the previous three years or (iv) the date on which it is deemed to be a large accelerated filer under the rules of the Securities and Exchange Commission (SEC), which generally is when it has more than $700 million in market value of its stock held by non-affiliates, has been a public company for at least 12 months and has filed one annual report on Form 10-K.

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies and adopted by the Company as of the specified effective date. Unless otherwise discussed, the impact of recently issued standards that are not yet effective will not have a material impact on the Company's financial position or results of operations upon adoption.

In February 2016, the FASB issued Accounting Standards Update (ASU) 2016-02, *Leases* (ASC 842). ASC 842 supersedes the lease recognition requirements in ASC 840, *Leases*. ASC 842 clarifies the definition of a lease and requires lessees to recognize right-of-use assets and lease liabilities for all leases, including those classified as operating leases under previous lease accounting guidance. ASC 842 is effective for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years. Early adoption is permitted. The Company is currently evaluating the impact that the adoption of ASC 842 will have on its financial statements and related disclosures. The Company expects adoption of ASC 842 will result in the recognition of a right-of-use asset for leased facilities and recognition of a liability for the lease payments remaining on the lease on its balance sheets. The Company does not expect a material change to the statements of operations or cash flows as a result of adopting ASC 842.

In June 2018, the FASB issued ASU 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*. This ASU simplifies the accounting for share-based awards to nonemployees by aligning it with the accounting for share-based awards to employees, with certain exceptions. This ASU is effective for annual periods beginning after December 15, 2019, and interim periods within annual periods beginning after December 15, 2020. Early adoption is permitted. The Company is currently assessing the impact of this standard on its financial statements and related disclosures.

New accounting pronouncements recently adopted

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers*. The standard replaces existing revenue recognition standards and significantly expands the disclosure requirements for revenue arrangements. The standard must be adopted using either a modified retrospective approach or a full retrospective approach for all periods presented. The Company early adopted the standard as of January 1, 2017 under the full retrospective method. The Company does not have and has never had any contracts that are within the scope of ASU 2014-09 or its predecessor guidance, ASC 605, *Revenue Recognition*. Accordingly, adoption of the standard did not have an impact on the Company's financial position, results of operations or cash flows. However, the adoption of this standard will impact the accounting for potential future revenue transactions.

In January 2016, the FASB issued ASU 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities*, which addresses certain aspects of recognition, measurement, presentation and disclosure of financial instruments. The Company early adopted this ASU as of January 1, 2017. The adoption of this ASU had an immaterial impact on the Company's financial statements.

In March 2016, the FASB issued ASU 2016-09, *Compensation—Stock Compensation: Improvements to Employee Share-Based Payment Accounting*. The areas affected by this ASU include accounting for income taxes, classification of excess tax benefits on the statement of cash flows, minimum statutory tax withholding requirements, and classification of employee taxes paid on the statement of cash flows when an employer withholds shares for tax-withholding purposes. In addition, under this guidance, an entity can make an accounting policy election to either estimate the number of awards that are expected to vest or account for forfeitures when they occur. The Company early adopted this ASU as of January 1, 2017 and has elected to account for forfeitures as they occur rather than apply an estimated forfeiture rate to stock-based compensation expense. The adoption of this ASU had an immaterial impact on the Company's financial statements.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments* that modifies how certain cash receipts and cash payments are presented and classified in the statement of cash flows. The Company early adopted this ASU as of January 1, 2017. The adoption of this ASU had an immaterial impact on the Company's financial statements.

In November 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows: Restricted Cash*, which requires that the statement of cash flows explain the change in the total amount of restricted cash during the period and other additional disclosures. The Company early adopted this ASU as of January 1, 2017. The adoption of this ASU had an immaterial impact on the Company's financial statements.

In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share: Distinguishing Liabilities from Equity; Derivatives and Hedging, (Part I) Accounting for Certain Financial Instruments with Down Round Features, (Part II) Replacement of the Indefinite Deferral for Mandatorily Redeemable Financial Instruments of Certain Nonpublic Entities and Certain Mandatorily Redeemable Noncontrolling Interests with a Scope Exception*. This ASU allows for the exclusion of a down round feature, when evaluating whether or not an instrument or embedded feature requires derivative classification. The Company early adopted this ASU as of January 1, 2017. The adoption of this ASU had an immaterial impact on the Company's financial statements.

3. Balance Sheet Components

Property and equipment, net

Property and equipment, net consists of the following:

	DECEMBER 31,	
	2017	2018
	(in thousands)	
Laboratory equipment	$ 946	$1,987
Office equipment	95	127
Leasehold improvements	25	25
Property and equipment, gross	1,066	2,139
Less accumulated depreciation	(389)	(667)
Total property and equipment, net	$ 677	$1,472

Depreciation expense was approximately $0.2 million and $0.3 million for the years ended December 31, 2017 and 2018, respectively.

Accrued liabilities

Accrued liabilities consisted of the following:

	DECEMBER 31,	
	2017	2018
	(in thousands)	
Accrued research and development materials and services	$137	$2,395
Accrued professional services	145	563
Accrued compensation	42	177
Other	183	447
Total accrued liabilities	$507	$3,582

4. License Agreements

Adimab agreement

In January 2017, the Company entered into an option and license agreement with Adimab LLC (Adimab) pursuant to which the Company acquired a non-exclusive license to conduct research to evaluate certain Adimab antibodies in the context of the Company's proprietary platform constructs directed to selected targets, and an option to be granted a non-exclusive license to develop and commercialize antibody products incorporating or derived from such Adimab antibodies. The Company may exercise such option on a research program-by-research program basis during a specified period after the expiration of the discovery and evaluation term. The Company is obligated to pay license fees of up to approximately $1.0 million in the aggregate to Adimab under this agreement during the evaluation term. Upon exercise of the Company's option for an antibody covered by the agreement, it will be required to pay additional amounts aggregating up to either $7.4 million or $16.0 million per product incorporating each such antibody upon the option exercise and subsequent achievement of specified development and regulatory milestones, depending on the nature of the Adimab antibody incorporated in such product. In addition, the Company is obligated to pay Adimab either low or mid single-digit royalties based on net sales of each optioned antibody by the Company and its affiliates and sublicensees, subject to specified reductions. During the year ended December 31, 2017 and 2018, the Company recognized zero and $0.3 million, respectively, in research and development expenses incurred under this agreement in its statements of operations.

LakePharma agreement

In May 2018, the Company and LakePharma, Inc. (LakePharma) entered into an agreement for screening services aimed towards discovering certain antibodies. If the Company elects to enter into a license to develop and commercialize one or more of the antibodies discovered under this agreement, the Company will be obligated to make payments to LakePharma aggregating up to $10.3 million based on achieving specified development and regulatory milestones for each such antibody. During the year ended December 31, 2018, the Company recognized $0.3 million in research and development expenses incurred under this agreement in its statements of operations.

5. Capital Structure

Common stock

The Company is authorized to issue 30,264,511 shares of common stock, par value $0.01 per share. Common stockholders are entitled to dividends when and if declared by the Company's Board of Directors and after any convertible preferred share dividends are fully paid. The holder of each share of common stock is entitled to one vote. As of December 31, 2018, the Company has never declared a dividend.

Table of Contents

Index to Financial Statements

Common stock reserved for future issuance, on an as converted basis, consists of the following:

	DECEMBER 31,	
	2017	2018
Preferred stock, issued and outstanding	6,384,797	9,501,620
Restricted stock, issued and outstanding	—	116,518
Stock options, issued and outstanding	768,763	1,523,285
Stock options, authorized for future issuance	760	456,818
Total	7,154,320	11,598,241

Convertible preferred stock

Convertible preferred stock consisted of the following:

	DECEMBER 31, 2017				
	AUTHORIZED SHARES	SHARES ISSUED AND OUTSTANDING	ORIGINAL ISSUE PRICE	CARRYING VALUE	AGGREGATE LIQUIDATION PREFERENCE
	(in thousands, except share and per share amounts)				
Series A convertible preferred stock	401,004	401,004	$ 3.3042	$ 1,325	$ 1,325
Series B convertible preferred stock	9,100,620	5,983,793	$ 6.6084	39,458	39,543
Total	9,501,624	6,384,797		$ 40,783	$ 40,868

	DECEMBER 31, 2018				
	AUTHORIZED SHARES	SHARES ISSUED AND OUTSTANDING	ORIGINAL ISSUE PRICE	CARRYING VALUE	AGGREGATE LIQUIDATION PREFERENCE
	(in thousands, except share and per share amounts)				
Series A convertible preferred stock	401,004	401,004	$ 3.3042	$ 1,325	$ 1,325
Series B convertible preferred stock	9,100,620	9,100,616	$ 6.6084	59,592	60,141
Total	9,501,624	9,501,620		$ 60,917	$ 61,466

During 2017, the Company issued 1,210,580 shares of Series B convertible preferred stock for proceeds of $8.0 million.

During 2018, the Company issued 3,116,823 shares of Series B convertible preferred stock for proceeds of $20.1 million, net of issuance costs.

In October 2018, the Company exchanged its existing common shares into 438,074 shares of common stock, 401,004 shares of Series A convertible preferred stock and 9,100,616 shares of Series B convertible preferred stock. All of the share information referenced throughout the financial statements and notes to the financial statements have been retroactively adjusted to reflect the change in capital structure. As a result of this change in capital structure, there was no additional stock-based compensation expense recorded.

As of December 31, 2018, the holders of the convertible preferred stock had the following rights and preferences:

Voting rights

Each share of convertible preferred stock has a number of votes equal to the number of shares of common stock into which it is convertible. The holders of the convertible preferred stock shall vote together with the holders of common stock as a single class upon any matter submitted to stockholders for a vote or written consent.

Table of Contents

Index to Financial Statements

Convertible preferred stock holders are entitled to vote in the election of board members based on the conversion of each preferred stock to common stock. The approval of the holders of (i) a majority of the voting power of the outstanding shares of convertible preferred stock, voting together as a single class and on an as-converted to common stock basis and (ii) a majority of the voting power of the outstanding shares of Series B convertible preferred stock, voting together as a single class on an as-converted-to-common-stock basis are required in order to take the following actions: amend or repeal any provisions in the charter or bylaws if it would adversely impact the convertible preferred stock holders, authorize, issue or obligate the issuance of options or shares (or securities convertible or exchangeable for options or shares) of any class superior to or on a parity with the convertible preferred stock, reclassify any common stock into shares having rights superior to or on a parity with the convertible preferred stock, increase the authorized number of shares of preferred stock, reduce the authorized number of members of the board of directors below three, and create or hold capital stock in any subsidiary not wholly owned by the Company, dispose of any capital stock of any subsidiary or permit any subsidiary to dispose of all or substantially all of the assets of such subsidiary.

Dividends

Holders of convertible preferred stock are entitled, when and as declared by the Company's Board of Directors, to receive non-cumulative dividends that accrue at an annual rate of $0.26 per share of Series A convertible preferred stock and $0.53 per share of Series B convertible preferred stock. These convertible preferred stock dividends are payable in preference and priority to any payment of any dividend on shares of common stock.

Conversion

Any share of convertible preferred stock may, at the option of the holder, be converted at any time into such number of fully-paid as is determined by dividing $3.30 and $6.61 for the Series A convertible preferred stock and Series B convertible preferred stock, respectively, by the conversion price for such series in effect at the time of conversion. As of December 31, 2017 and 2018, the Series A and Series B conversion prices equaled $3.30 and $6.61, respectively, and thus were convertible into common stock at a one-for-one basis. The conversion price for each series of convertible preferred stock is subject to an adjustment in the event of stock split, combination, common stock dividend or distribution, reclassification, exchange, substitution, or reorganization. The shares of convertible preferred stock are subject to anti-dilution protection if there are subsequent issuances of common stock without consideration or for a consideration per share less than the Series A conversion price in the case of Series A convertible preferred stock and the Series B conversion price in the case of Series B convertible preferred stock, in each case in effect immediately prior to the issuance of such additional share.

Each share of convertible preferred stock is automatically converted into common stock upon the earlier of the event of (i) the approval of at least 66 and 2/3 percent of the outstanding convertible preferred stock, or (ii) closing of an initial public offering where the price per share is not less than $14.54, adjusted for any stock splits, combinations, consolidations, or stock distributions or dividends, and the gross proceeds to the Company are not less than $20.0 million (Qualified IPO).

Liquidation

Upon any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary, before any distribution or payment shall be made to the holders of any common stock, the holders of convertible preferred stock shall be entitled to be paid out of the assets of the Company legally available for distribution for each share of convertible preferred stock held by them, an amount per share of convertible preferred stock equal to $3.30 per share and $6.61 per share, respectively, for each share of Series A convertible preferred stock and Series B convertible preferred stock held by them, as adjusted for stock splits, combinations, consolidations, or stock distributions or dividends, plus all declared and unpaid dividends thereon. If, upon any such liquidation event, the assets of the Company are insufficient to make payment in full to all holders of convertible preferred stock of the liquidation preference, then such assets shall be distributed among the holders of the convertible preferred stock at the time outstanding, ratably in proportion to the full amounts to which they would otherwise be respectively entitled. After completion of payment to the convertible preferred stock holders noted above, common stock holders will receive $0.01 per share for each share of common stock, or if the assets and funds are insufficient to permit the payment to such holders of the full aforesaid amount, then the entire assets and funds of the Company legally available for distribution shall be distributed ratably. Any remaining assets and funds, after payment of the preferential aforementioned amounts to the preferred and common, if the assets and funds are insufficient to permit the payment to such holders of the full aforesaid amount, then the entire assets and funds of the Company legally

available for distribution shall be distributed ratably. Any remaining assets and funds, after payment of the preferential aforementioned amounts to the preferred and common, shall be distributed ratably among holders of common stock and preferred stock in proportion to the number of common stock that would be held by each shareholder if all convertible preferred stock were converted into common stock immediately prior to liquidation, dissolution, or winding up, utilizing the then conversion price. As of December 31, 2018, in the event of any liquidation, dissolution, winding up of the Company, the holders of Series A convertible preferred stock were entitled to receive an amount equal to $3.30 per share and the holders of Series B convertible preferred stock were entitled to receive an amount equal to $6.61 per share.

A liquidation transaction is deemed to occur if the Company (i) merges or consolidates with any other company, and the stockholders of the Company no longer own at least 50% of the voting power of the surviving entity, (ii) sells all or substantially all of the Company's assets, and (iii) sells or disposes of one or more subsidiaries holding substantially all of the Company's assets, to a party not owned by the Company.

Redemption

The convertible preferred stock is not redeemable.

6. Stock-Based Compensation

In 2010, the Company's Board of Directors adopted the 2010 Stock Plan, as amended and restated (2010 Plan), which provided for the granting of stock options to employees, consultants, and outside directors of the Company. In 2018, the Company's Board of Directors adopted the 2018 Omnibus Incentive Plan (2018 Plan), which provided for the granting of stock-based awards including stock options and restricted stock awards to employees, consultants and outside directors of the Company.

Stock options

The amount, terms of grants, and exercisability provisions are determined and set by the Company's Board of Directors. The term of the options may be up to 10 years, and options are exercisable in cash or as otherwise determined by the Company's Board of Directors. Options granted to new employees generally vest over four years at a rate of 25% on the first anniversary of the date of grant and monthly thereafter over the next three years. Options granted to existing employees generally vest monthly over four years.

As of December 31, 2017 and 2018, the Company had authorized 769,538 shares for grant under the 2010 Plan. As of December 31, 2018, the Company had authorized 1,210,580 shares for grant under the 2018 Plan.

The following table summarizes stock option activity under the 2010 Plan and 2018 Plan:

		OUTSTANDING OPTIONS			
	SHARES AVAILABLE TO GRANT	NUMBER OF OPTIONS	WEIGHTED-AVERAGE EXERCISE PRICE	WEIGHTED-AVERAGE REMAINING CONTRACTUAL TERM (YEARS)	AGGREGATE INTRINSIC VALUE (in thousands)
Balance at December 31, 2016	151,638	650,545	$ 0.93		
Addition (reduction)—Option pool	(29,445)	—	—		
Granted	(124,837)	124,837	$ 1.00		
Exercised	—	(3,215)	$ 0.93		
Forfeited	3,404	(3,404)	$ 0.93		
Balance at December 31, 2017	760	768,763	$ 0.94	6.9	$ 195
Addition—Option pool	1,210,580				
Granted	(754,522)	754,522	$ 1.39		
Exercised	—	—	—		
Forfeited	—	—	—		
Balance at December 31, 2018	456,818	1,523,285	$ 1.16	7.9	$ 347
Exercisable at December 31, 2018		779,168	$ 0.99	6.2	$ 309

As of December 31, 2017 and 2018, there was approximately $0.1 million and $0.8 million, respectively, of unrecognized stock-based compensation, which the Company expects to recognize over a weighted-average period of 2.1 and 2.9 years.

The aggregate intrinsic values of options outstanding and exercisable were calculated as the difference between the exercise price of the options and the estimated fair value of the Company's common stock as determined by the Company's Board of Directors as of December 31, 2017 and 2018.

Determination of fair value

The fair value of each employee option grant was estimated on the date of grant using the Black-Scholes option-pricing model with the following weighted-average assumptions:

	YEAR ENDED DECEMBER 31,	
	2017	2018
Expected term (years)	6.0	5.9
Expected volatility	73.2%	77.5%
Risk-free interest rate	2.1%	2.9%
Expected dividends	—%	—%

Expected term—The expected term of the options represents the average period the stock options are expected to remain outstanding. As the Company does not have sufficient historical information to develop reasonable expectations about future exercise patterns and post-vesting employment termination behavior, the expected term of options granted is derived from the average midpoint between the weighted-average vesting and the contractual term, also known as the simplified method.

Expected volatility—Since the Company is private and does not have any trading history for its common stock, the expected volatility is based on the historical volatilities of the common stock of comparable publicly traded companies. The Company selected companies with comparable characteristics, including enterprise value, risk profiles, position within the industry, and with historical share price information, where applicable, sufficient to meet the expected life of the Company's stock-based awards.

Risk-free interest rate—The risk-free interest rate is based on the yield of U.S. Treasury notes as of the grant date with terms commensurate with the expected term of the option.

Expected dividends—The expected dividends assumption is based on the Company's expectation of not paying dividends in the foreseeable future; therefore, the Company used an expected dividend yield of zero.

For the years ended December 31, 2017 and 2018, the weighted-average fair value of options granted was $0.66 and $0.93 per share, respectively. The total fair value of options that vested during the years ended December 31, 2017 and 2018 was approximately $0.1 million and $0.2 million, respectively.

Restricted stock

During 2018, the Company issued 116,518 shares of common stock to an executive officer under a restricted stock agreement at a grant date fair value of $1.39 per share that vests over two years. The unvested shares are subject to forfeiture in the case that the grantee's service terminates prior to vesting of the restricted stock. At December 31, 2018, no shares of the restricted stock agreement had vested and the related stock-based compensation was immaterial. As of December 31, 2018, there was $0.2 million of unrecognized stock-based compensation related to restricted stock, which the Company expects to recognize over a weighted-average period of 1.6 years.

Table of Contents

Index to Financial Statements

Total stock-based compensation

Total stock-based compensation expense related to the 2010 Plan and 2018 Plan was recorded in the statements of operations and allocated as follows:

	YEAR ENDED DECEMBER 31,	
	2017	2018
	(in thousands)	
Research and development	$ 35	$ 51
General and administrative	58	132
Total	$ 93	$ 183

7. Income Taxes

Income taxes

The Company had no income tax expense for the years ended December 31, 2017 and 2018. The following is a reconciliation of the statutory federal income tax rate to the Company's effective tax rate:

	YEAR ENDED DECEMBER 31,	
	2017	2018
Federal tax (benefit) at statutory rate	34.0%	21.0%
State tax (benefit), net of federal benefit	4.9	5.5
Permanent differences and other	(1.5)	(0.8)
Research and development credits	5.3	5.4
Tax Cuts and Jobs Act impact	(4.3)	0.0
Change in valuation allowance	(38.4)	(31.1)
Effective income tax rate	—%	—%

Deferred tax assets and liabilities consist of the following:

	DECEMBER 31,	
	2017	2018
	(in thousands)	
Deferred tax assets:		
Net operating loss carryforwards	$ 1,331	$ 7,076
Accrued liabilities and reserves	168	457
Stock-based compensation	122	150
Intangible assets	—	9,040
Research and development credits	1,807	3,023
Total deferred tax assets	3,428	19,746
Deferred tax liabilities:		
Property and equipment	(124)	(109)
Total deferred tax liabilities	(124)	(109)
Valuation allowance	(3,304)	(19,637)
Net deferred tax assets	$ —	$ —

Table of Contents

Index to Financial Statements

The provisions of ASC Topic 740, *Accounting for Income Taxes* (ASC 740), require an assessment of both positive and negative evidence when determining whether it is more likely than not that deferred tax assets are recoverable. For the years ended December 31, 2017 and 2018, based on all available objective evidence, including the existence of cumulative losses, the Company determined that it was not more likely than not that the net deferred tax assets were fully realizable. Accordingly, the Company established a full valuation allowance against its deferred tax assets. The Company intends to maintain a full valuation allowance on net deferred tax assets until sufficient positive evidence exists to support reversal of the valuation allowance. During the years ended December 31, 2017 and 2018, the valuation allowance decreased by $9.2 million and increased by $16.3 million, respectively.

At December 31, 2018, the Company had net operating loss carryforwards available to reduce future taxable income, if any, for federal and California income tax purposes of approximately $25.8 million and $23.5 million, respectively. Of the federal net operating loss carryforwards at December 31, 2018, $4.3 million and $21.5 million can be carried forward indefinitely, subject to an annual limitation of 80% of taxable income. The California net operating loss carryforward begins expiring in 2036.

At December 31, 2018, the Company also had federal and California research and development tax credit carryforwards of $2.5 million and $1.9 million, respectively, available to offset future income tax, if any. The federal credit carryforwards begins expiring in 2030, and the California credits can be carried forward indefinitely.

Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an “ownership change,” the ability to use its pre-change net operating loss carryforwards and other pre-change attributes, such as research tax credits, to offset its post-change income may be limited. In general, an “ownership change” will occur if there is a cumulative change in the Company’s ownership by “5-percent shareholders” that exceeds 50 percentage points over a rolling three-year period. Similar rules may apply under state tax laws. Therefore, certain of the Company’s carryforward tax attributes may be subject to an annual limitation regarding their utilization against taxable income in future periods. The Company believes that, with its initial public offering and other transactions that have occurred in the past, the Company may have triggered or could trigger an “ownership change” limitation. The Company plans to complete a Section 382 analysis, and its ability to use the remaining net loss operating carryforwards and other tax attributes to offset its future taxable income may be limited if the Company has experienced an ownership change in connection with prior changes in stock ownership, including its initial public offering.

Uncertain tax positions

The Company adopted the provisions of ASC 740, which requires companies to determine whether it is “more likely than not” that a tax position will be sustained upon examination by the appropriate taxing authorities before any tax benefit can be recorded in the financial statements. It also provides guidance on the recognition, measurement, classification and interest and penalties related to uncertain tax positions.

The following table summarizes the activity related to the Company’s gross unrecognized tax benefits:

	DECEMBER 31,	
	2017	2018
	(in thousands)	
Beginning balance	$440	$ 665
Additions for tax positions related to current year	225	448
Ending balance	$665	$1,113

The unrecognized tax benefits, if recognized, would not affect the effective income tax rate due to the valuation allowance that currently offsets deferred tax assets. Interest and penalties were zero. The Company does not expect the unrecognized tax benefits to change significantly over the next 12 months.

The Company files federal and California income tax returns. All periods since inception are subject to examination by federal and state authorities, where applicable. There are currently no pending income tax examinations.

Table of Contents

Index to Financial Statements

Impact of the Tax Cuts and Jobs Act

The U.S. government enacted the Tax Cuts and Jobs Act (Tax Act) on December 22, 2017. The Tax Act incorporates broad and complex changes to the U.S. tax code. A main provision of the Tax Act reduces the corporate federal tax rate from a maximum rate of 34% to a flat rate of 21%, effective January 1, 2018. The Tax Act also contains a number of provisions that may impact the Company in future years.

As a result of the reduction in the corporate federal tax rate, the Company has remeasured its U.S. deferred tax assets and liabilities as of December 31, 2017 to reflect the lower rate expected to apply when these temporary differences reverse. The remeasurement resulted in a reduction in deferred tax assets of $0.5 million and a corresponding decrease in the valuation allowance.

As of December 31, 2018, the Company has completed its accounting for all of the enactment-date income tax effects of the Tax Act based upon the Company's current interpretation of the Tax Act. The Company will continue to monitor ongoing guidance in this area, as the U.S. Treasury Department, the Internal Revenue Service (IRS), and other standard-setting bodies could interpret or issue guidance on how provisions of the Tax Act will be applied or otherwise administered that is different from the Company's interpretation.

8. Commitments and Contingencies

Operating leases

The Company leases its headquarters with its main offices and laboratory facilities in Mountain View, California under a sublease agreement that ends in October 2019. Rent expense for the years ended December 31, 2017 and 2018, was $0.8 million and $0.7 million, respectively. Future minimum lease payments under this lease are $0.7 million in 2019. The Company entered into a new lease agreement in February 2019 as discussed further in Note 11.

In February 2017, the Company entered into an agreement wherein it subleases a portion of its office space to a third party through October 2019. For each of the years ended December 31, 2017 and 2018, the Company recognized $0.1 million as other income, net in the statements of operations in connection with this sublease.

Employee benefit plan

The Company sponsors a 401(k) defined contribution plan for its employees. This plan provides for tax-deferred salary deductions for all employees. Employee contributions are voluntary. Employees may contribute up to 100% of their annual compensation to this plan, as limited by an annual maximum amount as determined by the IRS.

Legal proceedings

The Company, from time to time, may be party to litigation arising in the ordinary course of business. The Company was not subject to any material legal proceedings during the years ended December 31, 2017 and 2018, and, to the best of its knowledge, no material legal proceedings are currently pending or threatened.

Indemnification

In the ordinary course of business, the Company enters into agreements that may include indemnification provisions. Pursuant to such agreements, the Company may indemnify, hold harmless and defend an indemnified party for losses suffered or incurred by the indemnified party. Some of the provisions will limit losses to those arising from third party actions. In some cases, the indemnification will continue after the termination of the agreement. The maximum potential amount of future payments the Company could be required to make under these provisions is not determinable. The Company has never incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. The Company has also entered into indemnification agreements with its directors and officers that may require the Company to indemnify its directors and officers against liabilities that may arise by reason of their status or service as directors or officers to the fullest extent permitted by Delaware corporate law. The Company currently has directors' and officers' insurance.

9. Related Party Transactions with its Majority Investor

The following are transactions that occurred between the Company and the Majority Investor, as defined in Note 1.

Table of Contents

Index to Financial Statements

Lease guarantee

In February 2017, the Majority Investor entered into an agreement to lend its credit and creditworthiness to the Company by providing a guarantee to allow the Company to enter into the lease agreement for its facilities in Mountain View, California in exchange for a guarantee commission of 1.5% per annum of the outstanding balance of the drawdowns on the letter of credit to this lease. The Company has not drawn on the guarantee nor incurred any related commission expense through December 31, 2018.

2017 Series B issuance

In 2017, the Company issued 1,210,580 shares of Series B convertible preferred stock to the Majority Investor for proceeds of $8.0 million.

Share repurchase

In December 2017, the Company repurchased 62,044 shares of Series A convertible preferred stock and 2,510 shares of Series B convertible preferred stock from the Company's minority stockholders at the original issue price of $3.30 and $6.61 per share, respectively. As the share repurchase was settled by the Majority Investor on behalf of the Company, the Majority Investor's payment to the minority stockholders of $0.2 million was treated as a capital contribution to the Company.

Related party equity transaction

In December 2017, in exchange for all of the Company's intellectual property rights (IP Rights), the Majority Investor issued a note receivable of $34.6 million to the Company, which accrued interest at 4.8% on an annual basis, with principal and interest payments starting in 2020, and had a term of 8 years. In August 2018, the Majority Investor returned the IP Rights to the Company and the note receivable and accrued interest due were cancelled.

2018 Series B issuance

In 2018, the Company issued 3,116,823 shares of Series B convertible preferred stock to the Majority Investor for proceeds of $20.1 million, net of issuance costs of $0.5 million, including a note receivable in the amount of $2.5 million.

In accordance with ASC, Topic 310-10, *Receivables*, specifically ASC 310-S99-2 and S-99-3, the Company records the receivables described above from the Majority Investor as contra-equity (rather than as an asset).

Related party loan

During 2018, the Company issued an unsecured promissory note to the Majority Investor for proceeds of $5.0 million, which is recorded on the accompanying balance sheets as a loan from a related party, along with accrued interest on these notes as of December 31, 2018. The promissory note accrues interest at 3.6% per annum and matures on December 31, 2019.

10. 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:

	YEAR ENDED DECEMBER 31,	
	2017	2018
	(in thousands, except share and per share amounts)	
Numerator:		
Net loss	$ (11,054)	$ (22,711)
Denominator:		
Weighted-average common shares outstanding used to compute net loss per share, basic and diluted	437,942	483,074
Net loss per share, basic and diluted	$ (25.24)	$ (51.84)

Table of Contents

Index to Financial Statements

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 common stock equivalents 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,	
	2017	2018
Series A convertible preferred stock	401,004	401,004
Series B convertible preferred stock	5,983,793	9,100,616
Restricted stock	—	116,518
Stock options	768,763	1,523,285
Total	7,153,560	11,141,423

The following table sets forth the computation of the Company's unaudited pro forma basic and diluted net loss per share:

	YEAR ENDED DECEMBER 31, 2018 (in thousands, except share and per share amounts)
Numerator:	
Net loss	$ (22,711)
Denominator:	
Common weighted-average common shares outstanding used to compute net loss per share, basic and diluted	438,074
Pro forma adjustment to reflect assumed conversion of preferred stock, basic and diluted	6,956,926
Common weighted-average common shares outstanding used to compute pro forma net loss per share, basic and diluted	7,395,000
Pro forma net loss per share, basic and diluted	$ (3.07)

11. Subsequent Events

The Company evaluated subsequent events through June 28, 2019, the date on which the accompanying financial statements were issued, and through August 30, 2019, as it relates to the Reverse Stock Split.

In 2019, the Company received $15.0 million in gross proceeds pursuant to an unsecured promissory note with the Majority Investor bearing interest at a rate of 3.6% per year with a maturity of December 31, 2019.

In February 2019, the Company increased the number of shares of common stock authorized for issuance under the 2018 Plan from 1.2 million shares to 1.6 million shares. In February and March 2019, the Company granted a total of 0.6 million stock options under the 2018 Plan.

In February 2019, the Company entered into a lease agreement for office, laboratory and manufacturing space in Mountain View, California, which commenced on May 1, 2019 and expires six years from the commencement date. The total minimum lease payments throughout the lease term are $11.4 million.

In June 2019, the Company entered into an agreement to issue and sell shares of its Series C convertible preferred stock for gross proceeds of approximately $102.0 million, which includes $20.0 million in settlement of all of the amounts outstanding under the unsecured promissory note with the Majority Investor.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Condensed Balance Sheets
(unaudited)
(in thousands, except share and per share amounts)

	DECEMBER 31, 2018	JUNE 30, 2019	PRO FORMA AS OF JUNE 30, 2019
Assets			
Current assets:			
Cash and cash equivalents	$ 1,887	$ 42,672	$ 82,672
Prepaid expenses and other current assets	485	1,238	1,238
Income tax receivable	35	35	35
Total current assets	2,407	43,945	83,945
Property and equipment, net	1,472	2,386	2,386
Restricted cash	100	100	100
Other assets	—	2,086	2,000
Total assets	$ 3,979	$ 48,517	$ 88,431
Liabilities, convertible preferred stock and stockholders' (deficit) equity			
Current liabilities:			
Accounts payable	$ 164	$ 2,134	$ 2,134
Accrued liabilities	3,582	4,048	4,048
Deferred rent	108	35	35
Related party loan	5,027	297	297
Other current liabilities	9	—	—
Total current liabilities	8,890	6,514	6,514
Deferred rent, non-current	—	187	187
Total liabilities	8,890	6,701	6,701
Commitments and contingencies (Note 7)			
Convertible preferred stock, $0.01 par value; 9,501,624 and 17,219,074 shares authorized as of December 31, 2018 and June 30, 2019, respectively; 9,501,620 and 14,192,617 shares issued and outstanding as of December 31, 2018 and June 30, 2019, respectively; aggregate liquidation preference of $61,466 and $123,466 as of December 31, 2018 and June 30, 2019, respectively; 0 shares authorized, issued and outstanding, pro forma	60,917	122,785	—
Stockholders' (deficit) equity:			
Common stock, $0.01 par value; 30,264,511 shares authorized as of December 31, 2018 and 33,669,269 shares authorized as of June 30, 2019; 438,074 shares issued and outstanding as of December 31, 2018 and 618,861 shares issued and outstanding as of June 30, 2019; 33,669,269 shares authorized, 11,406,722 shares issued and outstanding, pro forma	4	6	114
Non-voting common stock, $0.01 par value; 0 shares and 4,161,370 shares authorized as of December 31, 2018 and June 30, 2019, respectively; 0 shares issued and outstanding as of December 31, 2018 and June 30, 2019; 6,431,205 shares issued and outstanding, pro forma	—	—	64
Additional paid-in capital	751	1,243	163,770
Due from related party	(2,511)	—	—
Accumulated deficit	(64,072)	(82,218)	(82,218)
Total stockholders' (deficit) equity	(65,828)	(80,969)	81,730
Total liabilities, convertible preferred stock and stockholders' deficit	$ 3,979	$ 48,517	$ 88,431

The accompanying notes are an integral part of these condensed financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Condensed Statements of Operations
(unaudited)
(in thousands, except share and per share amounts)

	SIX MONTHS ENDED JUNE 30,	
	2018	2019
Operating expenses:		
Research and development	$ 5,976	$ 14,215
General and administrative	1,224	3,673
Total operating expenses	7,200	17,888
Loss from operations	(7,200)	(17,888)
Other income (expense), net	59	(258)
Net loss	$ (7,141)	$ (18,146)
Net loss per share, basic and diluted	$ (16.30)	(36.17)
Weighted-average common shares outstanding, basic and diluted	438,074	501,716
Pro forma net loss per share, basic and diluted		$ (1.80)
Pro forma weighted-average common and non-voting common shares outstanding, basic and diluted		10,081,088

The accompanying notes are an integral part of these condensed financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Condensed Statements of Convertible Preferred Stock and Stockholders' Deficit
(unaudited)
(in thousands, except share and per share amounts)

	CONVERTIBLE PREFERRED STOCK		COMMON STOCK		ADDITIONAL PAID-IN CAPITAL	DUE TO (FROM) RELATED PARTY	ACCUMULATED DEFICIT	TOTAL STOCKHOLDERS' DEFICIT
	SHARES	AMOUNT	SHARES	AMOUNT				
Balance at December 31, 2017	6,384,797	$40,783	438,074	$ 4	$ 35,479	$(34,625)	$ (41,361)	$ (40,503)
Related party equity transaction	—	—	—	—	835	3,041	—	3,876
Stock-based compensation expense	—	—	—	—	44	—	—	44
Net loss	—	—	—	—	—	—	(7,141)	(7,141)
Balance at June 30, 2018	6,384,797	$40,783	438,074	$ 4	$ 36,358	$(31,584)	$ (48,502)	$ (43,724)

	CONVERTIBLE PREFERRED STOCK		COMMON STOCK		ADDITIONAL PAID-IN CAPITAL	DUE TO (FROM) RELATED PARTY	ACCUMULATED DEFICIT	TOTAL STOCKHOLDERS' DEFICIT
	SHARES	AMOUNT	SHARES	AMOUNT				
Balance at December 31, 2018	9,501,620	$ 60,917	438,074	$ 4	$ 751	$ (2,511)	$ (64,072)	$ (65,828)
Issuance of Series C convertible preferred stock, net of issuance costs of $0.1 million	4,690,997	61,868	—	—	—	—	—	—
Exercise of stock options	—	—	173,222	2	162			164
Issuance of common stock	—	—	7,565	—	11	—	—	11
Related party equity transaction	—	—	—	—	16	2,511	—	2,527
Capital contribution from related party	—	—	—	—	23	—	—	23
Stock-based compensation expense	—	—	—	—	280	—	—	280
Net loss	—	—	—	—	—	—	(18,146)	(18,146)
Balance at June 30, 2019	14,192,617	$122,785	618,861	$ 6	$ 1,243	$ —	$ (82,218)	$ (80,969)

The accompanying notes are an integral part of these condensed financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Condensed Statements of Cash Flows
(in thousands)
(unaudited)

	SIX MONTHS ENDED JUNE 30,	
	2018	2019
Operating activities		
Net loss	$(7,141)	$(18,146)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	120	259
Stock-based compensation expense	44	280
Accrued interest on related party loan	—	270
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(647)	(753)
Other assets	(1)	—
Income tax receivable	(35)	—
Accounts payable	(209)	1,421
Accrued liabilities	94	(1,105)
Income tax payable	(128)	—
Deferred rent	(59)	114
Other current liabilities	9	(9)
Other long-term liabilities	(9)	—
Net cash used in operating activities	(7,962)	(17,669)
Investing activities		
Purchase of property and equipment	(321)	(1,148)
Net cash used in investing activities	(321)	(1,148)
Financing activities		
Proceeds from new investors for issuance of Series C convertible preferred stock	—	32,000
Proceeds from related party for issuance of Series C convertible preferred stock	—	10,000
Proceeds from related party capital contribution	3,876	2,549
Proceeds from loan from a related party	5,000	15,000
Proceeds from common stock issuance	—	11
Proceeds from the exercise of stock options	—	164
Payment of deferred offering costs	—	(122)
Net cash provided by financing activities	8,876	59,602
Net increase in cash, cash equivalents, and restricted cash	593	40,785
Cash, cash equivalents, and restricted cash at beginning of year	482	1,987
Cash, cash equivalents, and restricted cash at end of year	$ 1,075	$ 42,772
Cash, cash equivalents, and restricted cash at end of year		
Cash and cash equivalents	1,025	42,672
Restricted cash	50	100
Cash, cash equivalents, and restricted cash at end of year	$ 1,075	$ 42,772
Supplemental disclosure of cash flow information		
Cash paid for income taxes	$ (166)	$ —
Supplemental disclosure of non-cash investing and financing activities		
Acquisition of property and equipment in accounts payable and accrued liabilities	$ —	$ 334
Deferred offering costs included in accounts payable and accrued liabilities	$ —	$ 1,879
Series C convertible preferred stock offering costs included in accounts payable and accrued liabilities	$ —	$ 218
Settlement of related party loan through issuance of Series C convertible preferred stock	$ —	$ 20,000

The accompanying notes are an integral part of these condensed financial statements.

Table of Contents

Index to Financial Statements

IGM BIOSCIENCES, INC.

Notes to Condensed Financial Statements

(unaudited)

1. Organization

Organization

IGM Biosciences, Inc., (the Company), was incorporated in the state of Delaware in August 1993 under the name Palingen, Inc. and the name was subsequently changed to IGM Biosciences, Inc. in 2010. The Company's headquarters are in Mountain View, California. IGM Biosciences, Inc. is a biotechnology company engaged in the development of IgM antibody therapeutics for the treatment of cancer.

In December 2017, the Company established a holding company (Holdco); in April 2019, Holdco was subsequently dissolved and equity interests in Holdco were converted into equity interests in the Company. The information included in these financial statements is consistently presented as if it is that of the Company, even during the interim period when investors held their equity interests in Holdco. For the periods ended December 31, 2017 and 2018 and the six months ended June 30, 2019, Haldor Topsøe Holding A/S was the majority investor in the Company either through its direct equity ownership or indirectly as the majority owner of Holdco. Haldor Topsøe Holding A/S and Holdco represent a combined entity (Majority Investor) as referenced herein.

Reverse Stock Split

In August 2019, the Company filed an amendment to the Company's amended and restated certificate of incorporation to effect a reverse split of shares of the Company's common stock, non-voting common stock and convertible preferred stock, each on a 6.6084-for-1 basis (Reverse Stock Split). The Reverse Stock Split also applied to any outstanding securities or rights convertible into, or exchangeable or exercisable for, common stock, non-voting common stock or convertible preferred stock. The par value of the common stock was not adjusted as a result of the Reverse Stock Split. All references to common stock, non-voting common stock, restricted stock, options to purchase common stock, share data, per share data, convertible preferred stock and related information contained in the condensed financial statements and related footnotes have been retrospectively adjusted to reflect the effect of the Reverse Stock Split for all periods presented. The Reverse Stock Split was effected on August 30, 2019.

Liquidity and capital resources

The Company has incurred net operating losses and negative cash flows from operations since its inception and had an accumulated deficit of $82.2 million at June 30, 2019. As of June 30, 2019, the Company had cash and cash equivalents of $42.7 million. In June 2019, the Company entered into an agreement to issue and sell $102.0 million of shares of its Series C convertible preferred stock, which includes $20.0 million in settlement of all of the principal amounts outstanding under its promissory note. As of June 30, 2019, $62.0 million of gross proceeds were received, which includes $20.0 million in settlement of all of the principal amounts outstanding under the Company's promissory note. In July 2019, the Company received the remaining gross proceeds of $40.0 million. Due to the additional financing, management believes that its existing financial resources are sufficient to continue operating activities at least one year past the issuance date of these financial statements. Future capital requirements will depend on many factors, including the timing and extent of spending on research and development and the market acceptance of the Company's products.

Management plans to raise additional capital through a combination of public equity or private offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing distribution arrangements. There can be no assurance that in the event the Company requires additional financing, such financing will be available at terms acceptable to the Company, if at all.

Failure to generate sufficient cash flows from operations, raise additional capital, and reduce discretionary spending should additional capital not become available could have a material adverse effect on the Company's ability to achieve its intended business objectives. These factors would have a material adverse effect on the Company's future financial results, financial position, and cash flows.

Table of Contents

Index to Financial Statements

2. Summary of Significant Accounting Policies

Interim condensed financial statements

These interim condensed financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) and applicable rules and regulations of the U.S. Securities and Exchange Commission (SEC) for interim reporting. As permitted under those rules and regulations, certain footnotes or other financial information normally included in financial statements prepared in accordance with U.S. GAAP have been condensed or omitted. The interim condensed financial statements have been prepared on the same basis as the annual financial statements and, in the opinion of management, reflect all adjustments, which include only normal, recurring adjustments that are necessary to present fairly the Company's results for the interim periods presented. The interim condensed balance sheet as of December 31, 2018, is derived from the Company's audited financial statements included elsewhere in this prospectus. The results of operations for the six months ended June 30, 2019, are not necessarily indicative of the results to be expected for the year ending December 31, 2019, or for any other future annual or interim period. These interim condensed financial statements should be read in conjunction with the Company's audited financial statements included elsewhere in this prospectus.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, the Company evaluates its estimates, including, but not limited to, those related to manufacturing accruals, accrued research and development expenses, fair value of common stock, stock-based compensation, income tax uncertainties and the valuation of deferred tax assets. The Company bases its estimates on its historical experience and also on assumptions that it believes are reasonable; however, actual results could significantly differ from those estimates.

Pro forma financial information

Pro forma financial information reflects (i) the issuance of 3,026,449 shares of the Company's Series C convertible preferred stock and related gross proceeds of $40.0 million subsequent to June 30, 2019 and (ii) the automatic conversion of all outstanding shares of the Company's convertible preferred stock, (including the shares referenced in (i)) into an aggregate of 10,787,861 shares of common stock and 6,431,205 shares of non-voting common stock as if such conversion had occurred on June 30, 2019. 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 pro forma net loss per share does not include the shares expected to be sold and related proceeds to be received from this offering. The pro forma net loss per share for the six months ended June 30, 2019 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 (excluding the 3,026,449 shares of Series C convertible preferred stock described in (i) above), as if such conversion had occurred at January 1, 2019, or their issuance dates, if later.

Segments

The Company operates and manages its business as one reportable and operating segment, which is the business of developing engineered IgM antibodies for the treatment of cancer patients. The Company's chief executive officer, who is the chief operating decision maker, reviews financial information on an aggregate basis for allocating and evaluating financial performance. All long-lived assets are maintained in, and all losses are attributable to, the United States of America.

Cash, cash equivalents and restricted cash

The Company considers all highly liquid investments with original maturities of three months or less from the date of purchase to be cash and cash equivalents. Cash equivalents consist primarily of amounts invested in money market accounts and are stated at fair value. Restricted cash consists of a money market account that serves as collateral for a credit card agreement at one of the Company's financial institutions.

Fair value of financial instruments

The Company's financial assets and liabilities are accounted for in accordance with Financial Accounting Standards Board (FASB), Accounting Standards Codification (ASC), *Fair Value Measurements and Disclosures* (ASC 820). ASC 820 defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit

price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The fair value hierarchy of ASC 820 requires an entity to maximize the use of observable inputs when measuring fair value and classifies those inputs into three levels:

Level 1—Observable inputs, such as quoted prices in active markets.

Level 2—Inputs, other than the quoted prices in active markets, which are observable either directly or indirectly such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the instrument's anticipated life.

Level 3—Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

The Company primarily applies the market approach for recurring fair value measurements. The carrying values of the Company's financial instruments, including cash equivalents, accounts payable and accrued liabilities approximate fair value due to the short-term nature of these items.

Concentration of credit risk and other risks and uncertainties

Financial instruments that potentially subject the Company to a concentration of credit risk, consist primarily of cash and cash equivalents including money market funds. The Company maintains bank deposits in federally insured financial institutions and these deposits may exceed federally insured limits. The Company is exposed to credit risk in the event of default by the financial institutions holding its cash and cash equivalents to the extent recorded in the balance sheet. The Company has not experienced any losses on its deposits of cash and cash equivalents.

The Company's future results of operations involve a number of other risks and uncertainties. Factors that could affect the Company's future operating results and cause actual results to vary materially from expectations include, but are not limited to, uncertainty of results of clinical trials and reaching milestones, uncertainty of regulatory approval of the Company's potential product candidates, uncertainty of market acceptance of the Company's product candidates, competition from substitute products and larger companies, securing and protecting proprietary technology, strategic relationships and dependence on key individuals or sole source suppliers.

The Company's product candidates require approvals from the U.S. Food and Drug Administration and comparable foreign regulatory agencies prior to commercial sales in their respective jurisdictions. There can be no assurance that any product candidates will receive the necessary approvals. If the Company was denied approval, approval was delayed or the Company was unable to maintain approval for any product candidate, it could have a materially adverse impact on the Company.

Convertible preferred stock

The Company records shares of convertible preferred stock at their respective fair values on the dates of issuance, net of issuance costs. The convertible preferred stock is recorded outside of stockholders' deficit on the balance sheets because the shares contain liquidation features that are not solely within the Company's control. The Company has elected not to adjust the carrying values of the convertible preferred stock to the liquidation preferences of such shares because of the uncertainty of whether or when such an event would occur. Subsequent adjustments to increase the carrying values to the liquidation preferences will be made only when it becomes probable that such a liquidation event will occur.

Research and development expenses

The Company expenses research and developments costs as they are incurred. Research and development expenses consist primarily of: (i) personnel-related expenses, including salaries, benefits and stock-based compensation expense, for personnel in the Company's research and development functions; (ii) fees paid to third parties such as contractors, consultants and contract research organizations (CROs), for animal studies and other costs related to preclinical and planned clinical studies; (iii) costs related to acquiring and manufacturing research and clinical trial materials, including under agreements with third parties such as contract manufacturing organizations (CMOs), and other vendors; (iv) costs related to the preparation of regulatory submissions; (v) expenses related to laboratory supplies and services; and (vi) depreciation of equipment and facilities expenses.

Accrued research and development expenses

The Company records accruals for estimated costs of research, preclinical, and manufacturing development, which are significant components of research and development expenses. A substantial portion of the Company's ongoing

research and development activities is conducted by third-party service providers, CROs and CMOs. The Company's contracts with the CROs and CMOs generally include fees such as initiation fees, reservation fees, costs related to animal and planned clinical studies and safety tests, verification run costs, materials and reagents expenses, taxes, etc. The financial terms of these contracts are subject to negotiations, which vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to the Company under such contracts. The Company accrues the costs incurred under agreements with these third parties based on estimates of actual work completed in accordance with the respective agreements. The Company determines the estimated costs through discussions with internal personnel and external service providers as to the progress, or stage of completion or actual timeline (start-date and end-date) of the services and the agreed-upon fees to be paid for such services. Through June 30, 2019, there have been no material differences from the Company's estimated accrued research and development expenses to actual expenses.

Stock-based compensation

The Company accounts for stock-based compensation by measuring and recognizing compensation expense for all share-based awards made to employees and directors based on estimated grant-date fair values. The Company uses the straight-line method to allocate compensation cost to reporting periods over the requisite service period, which is generally the vesting period, and estimates the fair value of share-based awards to employees and directors using the Black-Scholes option-pricing valuation model. The Company accounts for forfeitures as they occur.

Leases, rent expense, and sublease income

The Company records rent expense on a straight-line basis over the life of the lease. In cases where there is a free rent period or future fixed rent escalations, the Company records a deferred rent liability. Additionally, the receipt of any lease incentives is recorded as a deferred rent liability which is amortized over the lease term as a reduction of rent expense. Building improvements made with the lease incentives or tenant allowances are capitalized as leasehold improvements and included in property and equipment in the condensed balance sheets. In addition, the Company subleases a portion of its office space to a third party. The Company recognizes rental income on a straight-line basis over the life of the sublease.

Comprehensive loss

There are no components of other comprehensive loss for the Company. Thus, comprehensive loss is the same as the net loss for the periods presented.

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.

Deferred offering costs

The Company capitalizes certain legal, professional accounting and other third-party fees that are directly associated with in-process equity financings as deferred offering costs until such financings are consummated. After consummation of the equity financing, these costs are recorded in stockholders' deficit as a reduction of additional paid-in capital generated as a result of the equity financing. Should the in-process equity financing be abandoned, the deferred offering costs will be expensed immediately as a charge to operating expenses in the statements of operations. As of June 30, 2019, $2.1 million of deferred offering costs were capitalized on the condensed balance sheets. There were no deferred offering costs as of December 31, 2018.

New accounting pronouncements recently adopted

In June 2018, the FASB issued ASU No. 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting (ASU 2018-07).* The new standard simplifies the accounting for share-based payments to nonemployees by aligning it with the accounting for share-based payments to employees, with certain exceptions. The Company early adopted ASU 2018-07 effective January 1, 2019. The early adoption of this new standard did not have a material impact on the Company's condensed financial statements.

Table of Contents

Index to Financial Statements

3. Balance Sheet Components

Property and equipment, net

Property and equipment, net consists of the following:

	DECEMBER 31, 2018	JUNE 30, 2019
	(in thousands)	
Laboratory equipment	$ 1,987	$ 3,127
Office equipment	127	141
Leasehold improvements	25	44
Property and equipment, gross	2,139	3,312
Less accumulated depreciation	(667)	(926)
Total property and equipment, net	$ 1,472	$ 2,386

Depreciation expense was approximately $0.1 million and $0.3 million for the six months ended June 30, 2018 and 2019, respectively.

Accrued liabilities

Accrued liabilities consisted of the following:

	DECEMBER 31, 2018	JUNE 30, 2019
	(in thousands)	
Accrued research and development materials and services	$ 2,395	$ 1,197
Accrued professional services	563	2,158
Accrued compensation	177	529
Other	447	164
Total accrued liabilities	$ 3,582	$ 4,048

4. License Agreements

Adimab agreement

In January 2017, the Company entered into an option and license agreement with Adimab LLC (Adimab) pursuant to which the Company acquired a non-exclusive license to conduct research to evaluate certain Adimab antibodies in the context of the Company's proprietary platform constructs directed to selected targets, and an option to be granted a non-exclusive license to develop and commercialize antibody products incorporating or derived from such Adimab antibodies. During the six months ended June 30, 2019, the Company recognized $0.1 million in research and development expenses under this agreement in its statements of operations.

LakePharma agreement

In May 2018, the Company and LakePharma, Inc. (LakePharma) entered into an agreement for screening services aimed towards discovering certain antibodies. During the six months ended June 30, 2019, the Company recognized $0.1 million in research and development expenses under this agreement in its statements of operations.

5. Capital Structure

Common stock

On June 27, 2019, the Company amended and restated the Certification of Incorporation in connection with the issuance of its Series C convertible preferred stock, which resulted in two classes of common stock: common stock and non-voting common stock. Unless otherwise noted, all references in these condensed consolidated financial statements to the Company's "common stock" and "common shares" refer to the Company's voting common stock. The Company is authorized to issue 33,669,269 shares of common stock and 4,161,370 shares of non-voting

common stock, par value $0.01 per share. Common stockholders and non-voting common stockholders are entitled to dividends when and if declared by the Company's Board of Directors and after any convertible preferred share dividends are fully paid. The holder of each share of common stock is entitled to one vote. The non-voting common stock have the same rights and powers, and rank equally to, share ratably with, and are identical in all respects as the common stock, except that the non-voting common stock shall be non-voting and convertible into common stock at the non-voting common stock holder's election upon an IPO, or upon written notice to Company, subject to certain limitations. As of June 30, 2019, there are no shares outstanding of the non-voting common stock. As of June 30, 2019, the Company has never declared a dividend.

Common stock reserved for future issuance, on an as converted basis, consists of the following:

	DECEMBER 31, 2018	JUNE 30, 2019
Preferred stock, issued and outstanding	9,501,620	14,192,617
Restricted stock, issued and outstanding	116,518	116,518
Stock options, issued and outstanding	1,523,285	1,929,283
Stock options, authorized for future issuance	456,818	247,572
Total	11,598,241	16,485,990

Convertible preferred stock

Convertible preferred stock consisted of the following:

	DECEMBER 31, 2018				
	AUTHORIZED SHARES	SHARES ISSUED AND OUTSTANDING	ORIGINAL ISSUE PRICE	CARRYING VALUE	AGGREGATE LIQUIDATION PREFERENCE
	(in thousands, except share and per share amounts)				
Series A convertible preferred stock	401,004	401,004	$ 3.3042	$ 1,325	$ 1,325
Series B convertible preferred stock	9,100,620	9,100,616	$ 6.6084	59,592	60,141
Total	9,501,624	9,501,620		$ 60,917	$ 61,466

	JUNE 30, 2019				
	AUTHORIZED SHARES	SHARES ISSUED AND OUTSTANDING	ORIGINAL ISSUE PRICE	CARRYING VALUE	AGGREGATE LIQUIDATION PREFERENCE
	(in thousands, except share and per share amounts)				
Series A convertible preferred stock	401,004	401,004	$ 3.3042	$ 1,325	$ 1,325
Series B convertible preferred stock	9,100,620	9,100,616	$ 6.6084	59,592	60,141
Series C convertible preferred stock	7,717,450	4,690,997	$ 13.2168	61,868	62,000
Total	17,219,074	14,192,617		$ 122,785	$ 123,466

As of June 30, 2019, the holders of the convertible preferred stock had the following rights and preferences:

Voting rights

Each share of convertible preferred stock has a number of votes equal to the number of shares of common stock into which it is convertible. The holders of the convertible preferred stock shall vote together with the holders of common stock as a single class upon any matter submitted to stockholders for a vote or written consent.

Convertible preferred stock holders are entitled to vote in the election of board members based on the conversion of each preferred stock to common stock. The approval of the holders of a majority of the voting power of the outstanding

shares of Series A and Series B convertible preferred stock, voting together as a single class on an as-converted-to-common-stock basis are required in order to take the following actions, so long as an aggregate of 4,750,812 shares of Series A and Series B convertible preferred stock are outstanding: amend or repeal any provisions in the charter or bylaws if it would disproportionately adversely impact the Series A and Series B convertible preferred stock holders, or change the authorized number of shares of Series A and B convertible preferred stock. The approval of (i) Baker Bros. Advisors LP (BBA) and Redmile Group (RG) or (ii) if BBA and RG do not each hold at least 1,134,919 and 945,765 shares of Series C convertible preferred stock, respectively, then holders of a majority of the outstanding Series C convertible preferred stock, are required in order to take the following actions, so long as at least 3,783,063 shares of Series C convertible preferred stock remain outstanding: liquidate, dissolve or wind-up the business or otherwise effect a deemed liquidation, change the Company's certificate of incorporation or bylaws in a manner that is disproportionately adverse to the Series C convertible preferred stock, create any equity security having rights, preferences or privileges senior to the Series C convertible preferred stock, purchase or redeem or pay any dividend on any capital shares prior to the Series C convertible preferred stock, create any debt security if the Company's aggregate indebtedness would exceed $500,000 unless approved by the Company's board of directors including one director designated by holders of the Series C convertible preferred stock, create or hold capital stock in any subsidiary that is not wholly owned, dispose of any capital stock of any Company subsidiary, permit any subsidiary to dispose of all or substantially all of its assets, change the size of the Company's board of directors, or sell or cause any of its subsidiaries to sell blockchain-based assets.

Dividends

Holders of convertible preferred stock are entitled, when and as declared by the Company's Board of Directors, to receive non-cumulative dividends that accrue at an annual rate of $0.26 per share of Series A convertible preferred stock, $0.53 per share of Series B convertible preferred stock, and $1.06 per share of any Series C convertible preferred stock. Dividends with respect to Series C convertible preferred stock shall rank in preference and priority to any payment of any dividend on Series A or Series B convertible preferred stock. These convertible preferred stock dividends are payable in preference and priority to any payment of any dividend on shares of common stock.

Conversion

Any share of convertible preferred stock may, at the option of the holder, be converted at any time into such number of fully-paid as is determined by dividing an amount equal to $3.30 for the Series A convertible preferred stock, $6.61 for the Series B convertible preferred stock, and $13.22 for the Series C convertible preferred stock, by the conversion price for such series in effect at the time of conversion. As of June 30, 2019, the Series A, Series B and Series C conversion prices equaled $3.30, $6.61, and $13.22 respectively, and thus were convertible into common stock at a one-for-one basis. The conversion price for each series of convertible preferred stock is subject to an adjustment in the event of stock split, combination, common stock dividend or distribution, reclassification, exchange, substitution, or reorganization. The shares of convertible preferred stock are subject to anti-dilution protection if there are subsequent issuances of common stock without consideration or for a consideration per share less than the Series A conversion price in the case of Series A convertible preferred stock; the Series B conversion price in the case of Series B convertible preferred stock, and the Series C conversion price in the case of the Series C convertible preferred stock in each case in effect immediately prior to the issuance of such additional share.

Each share of convertible preferred stock is automatically converted into common stock upon the earlier of the event of (i) the written consent of BBA and RG so long as they each hold at least 1,134,919 and 945,765 shares of Series C Preferred Stock, respectively (Requisite Holders), and holders of 4,519,726 shares of the Series A and/or Series B convertible preferred stock (ii) immediately prior to the closing of a firm-commitment underwritten public offering covering the sale of stock on a nationally recognized stock exchange to the public, if such IPO is approved by any two of BBA, RG or Major Investor, or (iii) immediately prior to the closing of a firm commitment underwritten IPO at a price per share (before deduction of underwriter discounts and commissions and offering costs) of not less than $14.54, adjusted for any stock splits, combinations, consolidations, or stock distributions or dividends, and the gross proceeds to the Company are not less than $75.0 million (Qualified IPO).

In the event of an IPO, certain holders may elect to convert their Series C convertible preferred shares into shares of non-voting common stock, subject to certain limitations.

Table of Contents

Index to Financial Statements

Liquidation

Upon any liquidation, dissolution, or winding up of the Company, whether voluntary or involuntary, before any distribution or payment shall be made to the holders of any common stock and non-voting common stock, Series A convertible preferred stock or Series B convertible preferred stock, the holders of Series C convertible preferred stock shall be entitled to receive $13.22 for each share of Series C convertible preferred stock held by them, as adjusted for stock splits, combinations, consolidations, or stock distributions or dividends, plus all declared and unpaid dividends thereon. If the assets and funds thus distributed among the holders of the Series C convertible preferred stock are insufficient to permit the payment to the holders of Series C convertible preferred stock of the liquidation preference, then all of the assets and funds of the Company legally available for distribution shall be distributed ratably among the holders of the Series C convertible preferred stock in proportion to the full amounts to which they would otherwise be respectively entitled. After completion of the payment to holders of the Series C convertible preferred stock described above, the holders of Series A and Series B convertible preferred stock shall be entitled to receive $3.30 per share and $6.61 per share, respectively, for each share of Series A convertible preferred stock and Series B convertible preferred stock held by them, as adjusted for stock splits, combinations, consolidations, or stock distributions or dividends, plus all declared and unpaid dividends thereon. If, upon any such liquidation event, the assets of the Company are insufficient to make payment in full to all holders of Series A and Series B convertible preferred stock of the liquidation preference after payment of the liquidation preference of the series C convertible preferred stock, then such assets shall be distributed among the holders of the Series A and Series B convertible preferred stock at the time outstanding, ratably in proportion to the full amounts to which they would otherwise be respectively entitled. After completion of payment to the convertible preferred stock holders noted above, common stockholders and non-voting common stockholders will receive $0.01 per share for each share of common stock and non-voting common stock, or if the assets and funds are insufficient to permit the payment to such holders of the full aforesaid amount, then the entire assets and funds of the Company legally available for distribution shall be distributed ratably among the holders of the common stock and non-voting common stock. Any remaining assets and funds, after payment of the preferential aforementioned amounts to the holders of the convertible preferred and common stock and non-voting common stock, shall be distributed ratably among holders of common stock and non-voting common stock and preferred stock in proportion to the number of shares of common stock that would be held by each shareholder if all convertible preferred stock were converted into common stock immediately prior to liquidation, dissolution, or winding up, utilizing the then conversion price. As of June 30, 2019 in the event of any liquidation, dissolution, winding up of the Company, the holders of Series A convertible preferred stock were entitled to receive an amount equal to $3.30 per share, the holders of Series B convertible preferred stock were entitled to receive an amount equal to $6.61 per share and the holders of Series C convertible preferred stock were entitled to receive an amount equal to $13.22 per share.

A liquidation transaction is deemed to occur if the Company (i) merges or consolidates with any other company, and the stockholders of the Company no longer own at least 50% of the voting power of the surviving entity, (ii) enters into a sale, lease, transfer, exclusive license, or other disposition of all or substantially all of the assets of the Company.

Redemption

The convertible preferred stock is not redeemable.

6. Stock-Based Compensation

As of June 30, 2019, the Company had authorized 1,588,886 shares of common stock for grant under the 2018 Plan. The 2010 Plan was terminated in June 2019, which resulted in a decrease to the option pool of 8,322 shares.

Table of Contents

Index to Financial Statements

The following table summarizes stock option activity:

	SHARES AVAILABLE TO GRANT	OUTSTANDING OPTIONS			
		NUMBER OF OPTIONS	WEIGHTED-AVERAGE EXERCISE PRICE	WEIGHTED-AVERAGE REMAINING CONTRACTUAL TERM (YEARS)	AGGREGATE INTRINSIC VALUE (in thousands)
Balance at December 31, 2018	456,818	1,523,285			
Addition—Option pool	369,983	—			
Granted(1)	(586,795)	586,795	$ 1.39		
Exercised	—	(173,222)	$ 0.95		
Cancelled	7,566	(7,575)	$ 0.93		
Balance at June 30, 2019	247,572	1,929,283	$ 1.25	8.2	$ 17,352
Exercisable at June 30, 2019		705,307	$ 1.06	6.1	$ 6,491

(1) These options were granted prior to March 31, 2019.

As of June 30, 2019 there was approximately $1.1 million of unrecognized stock-based compensation, which the Company expects to recognize over a weighted-average period of 3.0 years.

The aggregate intrinsic values of options outstanding and exercisable were calculated as the difference between the exercise price of the options and the estimated fair value of the Company's common stock as determined by the Company's Board of Directors as of June 30, 2019.

For the six months ended June 30, 2019, the weighted-average fair value of options granted was $0.99 per share. The total fair value of options that vested during the six months ended June 30, 2019 was approximately $0.1 million.

Restricted stock

During December 2018, the Company issued 116,518 shares of common stock to an executive officer under a restricted stock agreement at a grant date fair value of $1.39 per share that vests over two years. Any unvested shares are subject to forfeiture in the case that the grantee's service terminates. For the six months ended June 30, 2019, the related stock-based compensation was immaterial. As of June 30, 2019, there was $0.1 million of unrecognized stock-based compensation related to restricted stock, which the Company expects to recognize over a remaining weighted-average period of 1.1 years.

Total stock-based compensation

Total stock-based compensation expense related to the 2010 Plan and 2018 Plan was recorded in the statements of operations and allocated as follows:

	SIX MONTHS ENDED JUNE 30,	
	2018	2019
	(in thousands)	
Research and development	$ 26	$214
General and administrative	18	66
Total	$ 44	$280

Table of Contents

Index to Financial Statements

7. Commitments and Contingencies

Operating leases

The Company leases its headquarters with its main offices and laboratory facilities in Mountain View, California under a lease agreement that ends in April 2025. Rent expense for the six months ended June 30, 2018 and June 30, 2019 was $0.4 million and $0.7 million, respectively. Future minimum lease payments under this lease are $11.5 million as of June 30, 2019.

In February 2017, the Company entered into an agreement wherein it subleases a portion of its office space to a third party through October 2019. For the six months ended June 30, 2018 and June 30, 2019, the Company recognized $59,000 and $12,000, respectively, as other income (expense), net in the condensed statements of operations in connection with this sublease.

Employee benefit plan

The Company sponsors a 401(k) defined contribution plan for its employees. This plan provides for tax-deferred salary deductions for all employees. Employee contributions are voluntary. Employees may contribute up to 100% of their annual compensation to this plan, as limited by an annual maximum amount as determined by the IRS.

Legal proceedings

The Company, from time to time, may be party to litigation arising in the ordinary course of business. The Company was not subject to any material legal proceedings during the six months ended June 30, 2019 and, to the best of its knowledge, no material legal proceedings are currently pending or threatened.

Indemnification

In the ordinary course of business, the Company enters into agreements that may include indemnification provisions. Pursuant to such agreements, the Company may indemnify, hold harmless and defend an indemnified party for losses suffered or incurred by the indemnified party. Some of the provisions will limit losses to those arising from third party actions. In some cases, the indemnification will continue after the termination of the agreement. The maximum potential amount of future payments the Company could be required to make under these provisions is not determinable. The Company has never incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. The Company has also entered into indemnification agreements with its directors and officers that may require the Company to indemnify its directors and officers against liabilities that may arise by reason of their status or service as directors or officers to the fullest extent permitted by Delaware corporate law. The Company currently has directors' and officers' insurance.

8. Related Party Transactions with its Majority Investor

The following are transactions that occurred between the Company and the Majority Investor, as defined in Note 1.

Lease guarantee

In February 2019, the Majority Investor entered into an agreement to lend its credit and creditworthiness to the Company by providing a guarantee to allow the Company to enter into the lease agreement for its facilities in Mountain View, California. The Company has not drawn on the guarantee nor incurred any related commission expense through June 30, 2019.

Settlement of related party receivable

In April 2019, the Company received $2.5 million in cash from the Majority Investor in settlement of the outstanding note receivable as of December 31, 2018.

Related party loan

During January, February and April 2019, the Company issued an unsecured promissory note to the Majority Investor for proceeds of $15.0 million. In June 2019, the outstanding unsecured promissory note, amounting to $20.0 million, issued by the Majority Investor was settled as shares of Series C convertible preferred stock (see below).

2019 Series C issuance

In June 2019, the Company issued 2,269,838 shares of Series C convertible preferred stock to the Majority Investor for $30.0 million. A portion of the shares of Series C convertible preferred stock were issued to satisfy the settlement of the unsecured promissory note amounting to $20.0 million issued by the Majority Investor.

Table of Contents

Index to Financial Statements

9. 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:

	SIX MONTHS ENDED JUNE 30,	
	2018	2019
	(in thousands, except share and per share amounts)	
Numerator:		
Net loss	$ (7,141)	$ (18,146)
Denominator:		
Weighted-average common shares outstanding used to compute net loss per share, basic and diluted	438,074	501,716
Net loss per share, basic and diluted	$ (16.30)	$ (36.17)

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 common stock equivalents 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,	
	2018	2019
Series A convertible preferred stock	401,004	401,004
Series B convertible preferred stock	5,983,793	9,100,616
Series C convertible preferred stock	—	4,690,997
Restricted stock	—	116,518
Stock options	768,762	1,929,283
Total	7,153,559	16,238,418

The following table sets forth the computation of the Company's pro forma basic and diluted net loss per share:

	SIX MONTHS ENDED JUNE 30, 2019
	(in thousands, except share and per share amounts)
Numerator:	
Net loss	$ (18,146)
Denominator:	
Weighted-average common shares outstanding used to compute net loss per share, basic and diluted	501,716
Pro forma adjustment to reflect assumed conversion of preferred stock, basic and diluted(1)	9,579,372
Weighted-average common and non-voting common shares outstanding used to compute pro forma net loss per share, basic and diluted	10,081,088
Pro forma net loss per share, basic and diluted	$ (1.80)

(1) This excludes the 3,026,449 shares of Series C convertible preferred stock issued subsequent to June 30, 2019.

Table of Contents

Index to Financial Statements

10. Subsequent Events

The Company evaluated subsequent events through August 9, 2019, the date on which the accompanying unaudited interim financial statements were issued, and through August 30, 2019, as it relates to the Reverse Stock Split.

In June 2019, the Company entered into an agreement to issue and sell 7,717,450 shares of its Series C convertible preferred stock for $102.0 million. As of June 30, 2019, $62.0 million of gross proceeds were received, which includes $20.0 million in settlement of all of the principal amounts outstanding under its promissory note. In July 2019, the Company sold the remaining 3,026,449 shares for gross proceeds of $40.0 million.

In August 2019, the Company filed an amendment to the Company's amended and restated certificate of incorporation to effect the Reverse Stock Split (See Note 1) and amended the number of shares of common and non-voting common stock authorized for issuance to be 33,669,269 and 6,431,208, respectively.

Table of Contents

Index to Financial Statements

10,937,500 Shares

IGM Biosciences, Inc.

Common Stock

PROSPECTUS

Jefferies

Piper Jaffray

Stifel

Guggenheim Securities

September 17, 2019