424B4 1 d450902d424b4.htm 424B4

Table of Contents

Filed Pursuant to Rule 424(b)(4)
Registration No. 333-220537 and 333-220560

PROSPECTUS

6,100,000 Shares

COMMON STOCK

Juno Therapeutics, Inc. is offering 6,100,000 shares of its common stock.

Our common stock is listed on The NASDAQ Global Select Market under the symbol "JUNO." On September 21, 2017, the last reported sale price of our common stock on The NASDAQ Global Select Market was $41.62 per share.

Investing in our common stock involves risks. See "Risk Factors" beginning on page 9.

PRICE $41.00 A SHARE

	Price to Public	Underwriting Discounts and Commissions[1]	Proceeds to Juno
Per Share	$41.00	$2.1115	$38.8885
Total	$250,100,000	$12,880,150	$237,219,850

(1) See "Underwriters" for a description of compensation payable to the underwriters.

We have granted the underwriters an option to purchase up to 915,000 additional shares of our common stock at the price to the public, less the underwriting discounts and commissions. The underwriters can exercise this option at any time within 30 days after the date of this prospectus.

Pursuant to a stock purchase agreement with Celgene Corporation and certain of its subsidiaries (collectively, "Celgene") dated as of the date of this prospectus, we will sell to Celgene shares of our common stock in a private placement exempt from the registration requirements of the Securities Act of 1933, as amended. Pursuant to the stock purchase agreement, Celgene will purchase 659,415 shares of our common stock (or up to 758,327 of shares of our common stock if the underwriters exercise in full their option to purchase additional shares), at a sale price equal to the price to the public in this offering. The consummation of the concurrent private placement is contingent on the closing of this offering.

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

The underwriters expect to deliver the shares of common stock to purchasers on September 26, 2017.

Morgan Stanley **J.P. Morgan**

Barclays **Leerink Partners**

Wells Fargo Securities **Raymond James** **Wedbush PacGrow**

September 21, 2017

Table of Contents

TABLE OF CONTENTS

We and the underwriters have not authorized anyone to provide you any information other than that contained or incorporated by reference in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the underwriters are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information contained or incorporated by reference in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you is accurate only as of the date thereof, regardless of the time of delivery of such document or of any sale of our shares of common stock. Our business, financial condition and results of operations may have changed since those dates. It is important for you to read and consider all the information contained in this prospectus, including the documents incorporated by reference herein or any free writing prospectus provided in connection with this offering, in making your investment decision.

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 in 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 our common stock and the distribution of this prospectus outside of the United States.

Unless the context requires otherwise, in this registration statement the terms “Juno,” “we,” “us” and “our” refer to Juno Therapeutics, Inc. and its wholly-owned subsidiaries on a consolidated basis.

Table of Contents

PROSPECTUS SUMMARY

This summary highlights selected information about us, this offering and information appearing elsewhere in this prospectus and in the documents we incorporated by reference. This summary is not complete and does not contain all the information that you should consider before investing in our common stock pursuant to this prospectus. Before making an investment decision, to fully understand this offering and its consequences to you, you should carefully read this entire prospectus, including "Risk Factors" beginning on page 9 of this prospectus, the financial statements and related notes and the other information that we incorporate by reference herein, including our Annual Report on Form 10-K.

We are building a fully-integrated biopharmaceutical company focused on developing innovative cellular immunotherapies for the treatment of cancer. Founded on the vision that the use of human cells as therapeutic entities will drive one of the next important phases in medicine, we are developing cell-based cancer immunotherapies based on our chimeric antigen receptor ("CAR") and high-affinity T cell receptor ("TCR") technologies to genetically engineer T cells to recognize and kill cancer cells. Our most advanced product candidate, JCAR017, is in a potential registration trial for the treatment of relapsed or refractory ("r/r") diffuse large b cell lymphoma ("DLBCL"), and we are planning to begin a Phase I/II trial with JCAR017 in r/r chronic lymphocytic leukemia ("CLL") later in 2017. We have shown compelling clinical responses in clinical trials using multiple cell-based product candidates to address refractory B cell lymphomas and leukemias, and we also have a number of ongoing trials exploring our platform in solid-organ cancers and multiple myeloma and in combination with various strategies to overcome the immune-suppressive effects of cancer. In aggregate, we currently have 12 product candidates in human testing with 14 ongoing clinical trials targeting eight different protein targets in various cancers. Longer term, we aim to improve and leverage our cell-based platform to develop additional product candidates to address a broad range of cancers and human diseases, including moving forward our preclinical product candidates that target additional hematologic and solid-organ cancers.

Cancer is a leading cause of death in developed countries. Cancer is characterized by the uncontrolled proliferation of abnormal cells. Cancer cells contain mutated proteins and may overexpress other proteins normally found in the body at low levels. The immune system typically recognizes abnormal protein expression and eliminates these cells in a highly efficient process known as immune surveillance. Cancer cells' ability to evade immune surveillance is a key factor in their growth, spread, and persistence. In the last five years, there has been substantial scientific progress in countering these evasion mechanisms using immunotherapies, or therapies that activate the immune system. Immunotherapies are increasingly recognized as an important part of today's frontier in the treatment of cancer. The most promising data for CAR-T cell therapies have been in DLBCL, CLL, acute lymphoblastic leukemia, and multiple myeloma. Together, these indications represent a significant unmet medical need, with a total of more than 158,000 patients diagnosed with these diseases annually in the United States and the European Union.

A central player in cancer immunotherapy is a type of white blood cell known as the T cell. In healthy individuals, T cells identify and kill infected or abnormal cells, including cancer cells. We leverage two technologies—CARs and TCRs—to activate a patient's own T cells so that they attack cancer cells. Through genetic engineering, we insert a gene for a particular CAR or TCR construct into the T cell that enables it to recognize cancer cells. Our CAR technology directs T cells to recognize cancer cells based on the expression of specific proteins located on the cell surface, whereas our TCR technology provides the T cells with a specific T cell receptor to recognize protein fragments derived from either the surface or inside the cell.

We are investing substantially in manufacturing processes that we believe will be commercially scalable for both CARs and TCRs, and have established a Juno owned and operated manufacturing facility in Bothell, Washington, that is manufacturing clinical trial material for certain of our clinical trials, and that we intend to use for commercial manufacturing upon our first product approval. We harvest blood cells from a cancer patient,

Table of Contents

separate the appropriate T cells, activate the cell, insert the gene sequence for the CAR or TCR construct into the cell's DNA, and grow these modified T cells to the desired dose level. The modified T cells are stored for later infusion into the patient. Once infused, the T cells are designed to multiply, in a process known as cell expansion, when they encounter the targeted proteins and to kill the targeted cancer cells. We are also investing in technologies that we believe have the potential to meaningfully lower our manufacturing costs, decrease the time it takes to make a product candidate, improve patient outcomes, and increase our scale.

Our scientific founders and their institutions include world leaders in oncology, immunology, and cell therapy, and they actively contribute towards developing our product candidates and technologies. Collectively, these stakeholders share our commitment to bringing our product candidates to market and our vision of revolutionizing medicine through developing a broadly applicable cell-based platform. We have also entered into a number of strategic collaborations with commercial companies that we believe will help us manufacture and commercialize our product candidates around the world or develop additional or improved product candidates, including Celgene Corporation, Editas Medicine, Inc., Fate Therapeutics, Inc., and MedImmune Limited.

Recent Developments

JCAR017

We presented interim data from an ongoing, multicenter Phase I trial of JCAR017 at the American Society of Oncology meeting in early June 2017. We refer to this Phase I trial as the TRANSCEND trial. The trial is in adults with r/r aggressive non-Hodgkin lymphoma ("NHL"), including DLBCL, and all patients on the trial receive lymphodepletion with fludarabine and cyclophosphamide ("flu/cy"). There is no prophylactic use of safety medications called for by the protocol.

The interim data was presented for all r/r/ DLBCL patients treated to date ("All Patients"), and for a subset that includes patients representative of the population that we intend to use as a pivotal cohort (the "Core Group"). As of a data cutoff date of May 4, 2017, results were as follows:

Summary of Clinical Data

JCAR017 Phase I – r/r DLBCL

	All Patients[1]	Core Group[2]
Number of Patients	54-55	44
Overall Response Rate: Complete Responses + Partial Responses	41/54 (76%)	38/44 (86%)
Complete Response	28/54 (52%)	26/44 (59%)
Overall Response Rate at Three Months	21/41 (51%)	21/32 (66%)
Complete Response Rate at Three Months	16/41 (39%)	16/32 (50%)
Severe Cytokine Release Syndrome[3]	1/55 (2%)	1/44 (2%)
Severe Neurotoxicity[4]	9/55 (16%)	8/44 (18%)

(1) Efficacy data includes 54 patients with r/r DLBCL. Safety data includes an additional patient with r/r DLBCL not evaluable for efficacy.

(2) The Core Group is composed of patients with DLBCL (de novo and transformed from follicular lymphoma) and an "ECOG" performance status of 0 or 1. The ECOG performance status is a scale used to measure how a disease affects daily living abilities of a patient, and the trial is enrolling patients that range in ECOG performance status grades 0 to 2. Grade 0 represents that a patient is fully active and able to carry on all pre-disease performance without restriction. Grade 1 represents that a patient is restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, such as light

Table of Contents

house work or office work. Grade 2 represents that a patient is ambulatory and capable of all self-care but unable to carry out any work activities, and is up and about more than 50% of waking hours.

(3) For this trial, severe cytokine release syndrome ("sCRS") is defined based on Lee et al. 2014 criteria, according with which sCRS is generally identified by certain side effects, including hypotension, or low blood pressure, requiring treatment with a high dose of a single vasopressor or with multiple vasopressors, or respiratory distress, or breathing difficulties, requiring significant supplemental oxygen and in some cases mechanical ventilation and medical management in the intensive care unit.

(4) Common Terminology Criteria for Adverse Events ("CTCAE") Grade 3 and above neurotoxicity. Characteristic symptoms of neurotoxicity include confusional state, aphasia, encephalopathy, tremor, muscular weakness, and somnolence.

Other treatment-emergent adverse events, whether or not treatment-related, occurring in at least 30% of All Patients included neutropenia, cytokine release syndrome ("CRS") of any grade, and fatigue. There was one patient death in the trial that the investigator assessed as possibly treatment-related in an r/r DLBCL patient who received flu/cy lymphodepletion, with CTCAE Grade 5 diffuse alveolar damage, no CRS and CTCAE Grade 3 neurotoxicity, which had resolved. Thirty-three out of 55, or 60%, of All Patients, including 29 out of 44, or 66%, of the Core Group, did not experience any CRS or neurotoxicity. Overall, 12 out of 55, or 22% of All Patients required at least one treatment anti-IL-6 or corticosteroid therapy for CRS or neurotoxicity. One additional patient in the All Patients group received dexamethasone for other reasons. Of the 12 receiving these therapies for CRS or neurotoxicity, 6 out of 55, or 11%, received tocilizumab, and 11, or 20%, received dexamethasone either alone (six patients) or in combination with tocilizumab (five patients).

The TRANSCEND trial was designed to evaluate multiple dose levels and to date has evaluated two dose levels: dose level one ($5x10^7$ T cells) and dose level two ($1x10^8$ T cells). Data to date suggest the possibility for improved efficacy at the higher dose and similar toxicity when compared to the lower dose. The trial is also exploring a one dose versus two dose dosing schedule, and early data do not suggest a clear benefit to a second dose. When treated at JCAR017 dose level 1 with a single-dose schedule, 11 out of 19 r/r DLBCL patients in the Core Group, or 58%, had an overall response at three months and 8 of 19 of these patients in the Core Group, or 42%, had a complete response at that time. Rates of severe neurotoxicity and sCRS for All Patients at this dose level and schedule were six out of 30 (20%) and 1 out of 30 (3%), respectively. When treated at JCAR017 dose level 2 with a single-dose schedule, seven out of nine r/r DLBCL patients in the Core Group, or 78%, had an overall response at three months and five out of nine of these patients, or 56%, had a complete response at that time. The rate of severe neurotoxicity for All Patients at this dose level and schedule was 2 out of 19 (11%), and no patients at this dose level experienced sCRS. In patients in the Core Group who showed any response, 97% remained alive in follow up that ranged from 0.9 to 12 months as of May 4, 2017. The TRANSCEND efficacy results presented in this prospectus are based on investigator assessments of an ongoing trial; the final safety and efficacy results may change with more patient data and the final efficacy results may change based on independent radiology review.

Juno believes that the Phase I trial in JCAR017 may support accelerated U.S. regulatory approval of JCAR017 as early as 2018. Key variables impacting the timing of approval will be the time it takes to complete enrollment of our pivotal cohort, the timing of our FDA submission, which we expect to be completed for JCAR017 in r/r DLBCL in the second half of 2018, and the duration of FDA review. We are currently enrolling the cohort that we believe may support registration. We intend to update data from the TRANSCEND trial at the American Society of Hematology ("ASH") meeting in December of 2017 if our abstract is accepted for presentation. The scheduled abstract release date is November 1, 2017. The ASH abstract summarizes data through July 7, 2017, on a total of 74 patients, including 68 evaluable patients with r/r DLBCL. We are embargoed from publicly disclosing detailed data from this abstract until the release date. Because the TRANSCEND trial is still ongoing and not blinded, we continue to collect patient data beyond the abstract data

Table of Contents

cutoff date. The independent data safety monitoring board ("DSMB") for the trial is provided data updates quarterly and on an ad hoc basis whenever appropriate.

Financial Overview

Our operating expenses increased from 2015 through 2016, and we expect that they will continue to increase in 2017 and beyond as we accelerate our clinical development efforts with respect to JCAR017 and the other product candidates in our pipeline.

Corporate History and Information

We were incorporated in Delaware on August 5, 2013. Our principal executive offices are located at 400 Dexter Avenue North, Suite 1200, Seattle, Washington 98109. Our telephone number is (206) 582-1600. Our website address is www.junotherapeutics.com. Information contained on the website is not incorporated by reference into this prospectus, and should not be considered to be part of this prospectus.

We use Juno Therapeutics®, the Juno Therapeutics logo, and other marks as trademarks in the United States and other countries. This prospectus contains references to our trademarks and service marks and to those belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the ® or ™ 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 entities' trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other entity.

Table of Contents

THE OFFERING

Common stock offered by us	6,100,000 shares of our common stock.
Underwriters' option to purchase additional shares of common stock	Up to 915,000 additional shares of our common stock.
Common stock sold by us in the concurrent private placement	Pursuant to a stock purchase agreement with Celgene Corporation and certain of its subsidiaries (collectively, "Celgene") dated as of the date of this prospectus, we will sell to Celgene 659,415 shares of our common stock (or up to 758,327 shares of our common stock if the underwriters exercise in full their option to purchase additional shares) in a private placement exempt from the registration requirements of the Securities Act of 1933, as amended, at $41.00 per share. The consummation of the concurrent private placement is contingent on the closing of this offering. We will receive the full proceeds and will not pay any underwriting discounts or commissions with respect to the shares that are sold in the private placement. Aggregate proceeds for the sale to Celgene will be $27.0 million (or $31.1 million if the underwriters exercise in full their option to purchase additional shares). The number of shares we will sell to Celgene constitutes approximately 9.76% of the aggregate number of the shares sold in this offering and the private placement, which is equal to the percentage of our common stock Celgene beneficially owned following its last exercise of its top-up purchase rights pursuant to that share purchase agreement, dated as of June 29, 2015, by and between us and Celgene.
Common stock to be outstanding after this offering and the concurrent private placement	111,656,380 shares (or 112,670,292 shares if the underwriters exercise their option to purchase additional shares in full).
Use of proceeds	We intend to use the net proceeds from this offering and the concurrent private placement for working capital and other general corporate purposes. See "Use of Proceeds."
The NASDAQ Global Select Market symbol	"JUNO"

Table of Contents

The number of shares of common stock to be outstanding following this offering and the concurrent private placement is based on 104,896,965 shares of our common stock outstanding as of June 30, 2017, and excludes:

- 1,324,981 shares of common stock outstanding subject to vesting as of June 30, 2017, which shares were issued pursuant to our 2013 Equity Incentive Plan, which shares may become available for issuance under our 2014 Equity Incentive Plan if such shares are forfeited;
- 11,062,145 shares of common stock issuable upon exercise of options outstanding as of June 30, 2017, having a weighted-average exercise price of $27.77 per share, which shares may become available for future awards under our 2014 Equity Incentive Plan if such options are cancelled or expire unexercised;
- 1,627,256 shares of common stock subject to restricted stock unit awards outstanding as of June 30, 2017, which shares may become available for future awards under our 2014 Equity Incentive Plan if such awards are cancelled prior to vesting;
- 499,345 shares of common stock subject to options or restricted stock unit awards granted under our 2014 Equity Incentive Plan between July 1, 2017 and September 19, 2017;
- 7,676,599 shares of common stock reserved for future awards under the 2014 Equity Incentive Plan as of June 30, 2017;
- 5,740,926 shares of common stock reserved for issuance under the 2014 Employee Stock Purchase Plan as of June 30, 2017;
- 79,403 shares of common stock outstanding subject to vesting as of June 30, 2017, which shares were issued in connection with our acquisitions of X-Body, Inc. and AbVitro Inc. (“AbVitro”);
- up to $6.5 million in shares that may be issued to the founder of RedoxTherapies, Inc. upon the achievement of a specified clinical milestone under the agreement by which we acquired RedoxTherapies, Inc.;
- up to $25 million in shares that may be issued to Opus Bio, Inc. (“Opus Bio”) upon the achievement of a specified clinical milestone under our exclusive license agreement with Opus Bio;
- shares that may be issued pursuant to top-up or acquisition rights under our agreement with Celgene dated June 29, 2015; and
- up to $440 million in shares that may be issued pursuant to success payments under our agreements with Fred Hutchinson Cancer Research Center (“FHCRC”) and Memorial Sloan Kettering Cancer Center (“MSK”).

Unless otherwise indicated, this prospectus reflects and assumes no exercise of the underwriters’ option to purchase additional shares of common stock.

Table of Contents

SUMMARY CONSOLIDATED FINANCIAL DATA

We derived the summary statements of operations data for the years ended December 31, 2014, 2015 and 2016 and balance sheet data presented below from our audited consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2016, which is incorporated by reference. We derived the unaudited summary consolidated financial data as of June 30, 2017 and for the six months ended June 30, 2016 and 2017 from our unaudited condensed consolidated financial statements included in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, which is incorporated into this prospectus by reference. In the opinion of management, the unaudited interim statements reflect all adjustments, which include normal recurring adjustments, necessary for a fair presentation of the financial statements. Our historical results are not necessarily indicative of the results that may be expected in the future and the results as of and for the six months ended June 30, 2017 are not necessarily indicative of results expected for the current fiscal year or any future period. Refer to the selected historical financial data below in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the accompanying notes included in our Annual Report on Form 10-K for the year ended December 31, 2016 and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, which are each incorporated into this prospectus by reference.

	Six Months Ended June 30,		Year Ended December 31,		
	2017	2016	2016	2015	2014
	(in thousands, except per share data)				
Consolidated statements of operations data:					
Revenue	$ 40,595	$ 37,377	$ 79,356	$ 18,215	$ —
Loss from operations [1]	(187,763)	(141,425)	(255,604)	(244,100)	(232,758)
Net loss attributable to common stockholders [2]	(182,937)	(135,905)	(245,580)	(239,376)	(310,871)
Net loss per share attributable to common stockholders, basic and diluted	(1.76)	(1.35)	(2.42)	(2.72)	(36.82)

(1) Loss from operations for the six months ended June 30, 2017 included non-cash expense of $24.6 million associated with the change in the estimated fair value and elapsed service period for our potential success payment liabilities to FHCRC and MSK, non-cash expense of $2.4 million associated with amortization of the intangible asset recorded in connection with the AbVitro acquisition, and non-cash expense of $3.2 million related to the change in estimated fair value of our contingent consideration liabilities.

Loss from operations for the six months ended June 30, 2016 included a gain of $3.1 million associated with the change in the estimated fair value and the elapsed service period for our potential success payment liabilities to FHCRC and MSK, and a gain of $5.5 million related to the change in estimated fair value of our contingent consideration liabilities.

Loss from operations for the year ended December 31, 2016 included non-cash milestone payments of $23.2 million equal to the fair value of 603,364 shares of common stock issued to Opus Bio based on the closing stock price on the days the associated milestones were achieved, costs of $15.0 million to acquire technology, a gain of $32.5 million associated with the change in the estimated fair value and elapsed service period for our potential success payment liabilities to FHCRC and MSK, and a gain of $9.7 million related to the change in estimated fair value of our contingent consideration liabilities.

Loss from operations for the year ended December 31, 2015 included non-cash expense of $51.6 million associated the change in the estimated fair value and elapsed service period for our actual and potential success payment liabilities to FHCRC and MSK and $30.8 million associated with the acquisition of new technology. In December 2015, success payment obligations to FHCRC were triggered in the amount of $75.0 million less indirect cost offsets of $3.3 million and to MSK of $10.0 million less indirect cost offsets

Table of Contents

of $1.0 million. We elected to make the payments in shares of our common stock and thereby issued 1,601,085 shares to FHCRC in December 2015 and 240,381 shares to MSK in March 2016.

Loss from operations for the year ended December 31, 2014 included non-cash expense of $84.9 million associated with the change in the estimated fair value and elapsed service period for our potential success payment liabilities to FHCRC and MSK, $64.1 million for the non-cash portion of the upfront fee to acquire technology related to JCAR018, and $20.0 million for the cash portion of the upfront fee to acquire technology related to JCAR018.

(2) Net loss attributable to common stockholders for the year ended December 31, 2014 included non-cash deemed dividends of $67.5 million recorded upon issuance of our convertible preferred stock and $10.7 million recorded in connection with changes in the fair value of our Series A and Series A-2 convertible preferred stock option.

	As of June 30, 2017	
	Actual	As Adjusted[2]
	(In thousands)	
Consolidated balance sheets data:		
Cash, cash equivalents, and marketable securities	$ 801,777	$ 1,063,996
Working capital	591,738	853,957
Total assets	1,268,965	1,531,184
Total liabilities	331,780	331,780
Common stock and additional paid-in capital	1,950,729	2,212,948
Accumulated deficit[1]	(1,014,174)	(1,014,174)
Total stockholders' (deficit) equity	937,185	1,199,404

(1) Accumulated deficit as of June 30, 2017 includes $174.4 million in upfront fees to acquire technology, of which $100.5 million was paid in cash and $73.9 million was paid through the issuance of common stock, non-cash expense of $128.6 million associated with the change in the estimated fair value and elapsed service period for our potential and actual success payment liability to FHCRC and MSK, expense of $23.2 million associated with non-cash milestones, a non-cash gain of $6.4 million associated with the change in the estimated value of our contingent consideration liabilities, $51.1 million related to non-cash deemed dividends, and $10.7 million of expense associated with our convertible preferred stock options.

(2) Reflects on an as adjusted basis the sale and issuance by us of 6,100,000 shares of common stock in this offering, and 659,415 shares of common stock to Celgene in the concurrent private placement, at a price of $41.00 per share after deducting underwriting discounts and commissions, in the case of the offering, and estimated offering expenses payable by us.

Table of Contents

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below in addition to the information in the remainder of this prospectus or incorporated by reference, including subsequent periodic filings with the SEC before making an investment decision. The risks and uncertainties below and incorporated by reference into this prospectus are not the only ones related to our business, our common stock or the offering. Additional risks and uncertainties that are not presently known to us, of which we are unaware or that we currently believe are immaterial could become important factors that materially and adversely affect our business. If any of the following risks actually occurs, our business operations, financial condition, results of operations and prospects could be materially and adversely affected. The market price of our common stock could decline due to the materialization of any of these or other risks, and you may lose all or part of your investment.

Risks Related to Our Business and Industry

We are a clinical-stage company and have a limited operating history, which may make it difficult to evaluate our current business and predict our future performance.

We are a clinical-stage biopharmaceutical company that was formed in August 2013. We have no cell-therapy products approved for commercial sale and, as of June 30, 2017, had not generated any revenue from such products. We are focused on developing products that use human cells as therapeutic entities and, although there have been significant advances in cell-based immunotherapy, our T cell technologies are new and largely unproven. Our limited operating history, particularly in light of the rapidly evolving cancer immunotherapy field, may make it difficult to evaluate our current business and predict our future performance. Our short history as an operating company makes any assessment of our future success or viability subject to significant uncertainty. We will encounter risks and difficulties frequently experienced by early-stage companies in rapidly evolving fields. If we do not address these risks successfully, our business will suffer.

We have incurred net losses in each period since our inception and anticipate that we will continue to incur net losses in the future.

We are not profitable and have incurred losses in each period since our inception. For the six months ended June 30, 2017, we reported a net loss of $182.9 million. As of June 30, 2017, we had an accumulated deficit of $1.01 billion, which includes $51.1 million related to non-cash deemed dividends, $174.4 million in upfront fees to acquire technology, of which $100.5 million was paid in cash and $73.9 million was paid through the issuance of common stock, non-cash expense of $128.6 million associated with the change in the estimated fair value and elapsed service period for our potential and actual success payment liability to Fred Hutchinson Cancer Research Center (“FHCRC”) and Memorial Sloan Kettering Cancer Center (“MSK”), expense of $23.2 million associated with non-cash milestones, non-cash gain of $6.4 million associated with the change in the estimated value of our contingent consideration liabilities, and $10.7 million of expense associated with our convertible preferred stock options. We expect these losses to increase as we continue to incur significant research and development and other expenses related to our ongoing operations, seek regulatory approvals for our product candidates, scale-up manufacturing capabilities and hire additional personnel to support the development of our product candidates and to enhance our operational, financial and information management systems.

A critical aspect of our strategy is to invest significantly in our technology platform to improve the efficacy and safety of our product candidates. Even if we succeed in commercializing one or more of these product candidates, we will continue to incur losses for the foreseeable future relating to our substantial research and development expenditures to develop our technologies. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue. Our prior losses and expected future losses have had and will continue to have an adverse effect on our

Table of Contents

stockholders' equity and working capital. Further, the net losses we incur may fluctuate significantly from quarter to quarter and year to year, such that a period to period comparison of our results of operations may not be a good indication of our future performance.

We expect to continue to incur significant losses for the foreseeable future. We expect these losses and our cash utilization to increase in the near term as we continue to conduct clinical trials, file additional Investigational New Drug ("IND") filings for additional product candidates, and conduct research and development of our other product candidates.

We are collaborating with Celgene Corporation and a subsidiary of Celgene Corporation (collectively, "Celgene") pursuant to the master research and collaboration agreement that we entered into with Celgene in June 2015 (the "Celgene Collaboration Agreement"), under which we and Celgene will research, develop, and commercialize novel cellular therapy product candidates and other immuno-oncology and immunology therapeutics, including, in particular, chimeric antigen receptor ("CAR") and high-affinity T cell receptor ("TCR") product candidates. Contingent upon the payment of certain upfront payments, Celgene may exercise options to acquire exclusive licenses in territories outside North America and China to certain therapeutics we develop and each party may exercise certain options to co-develop and co-commercialize product candidates developed, or acquired or in-licensed, by the other party. If Celgene does not exercise its options, or if Celgene exercises an option for a program (such as it has for our CD19 program) but later the license agreement with Celgene for such program is terminated, we will be responsible for the full costs of funding further worldwide development of the relevant product candidates, which would cause our expenses to increase, unless we choose not to pursue further development of such product candidates or we enter into another collaboration for such product candidates, which may not be possible within an acceptable timeframe or on suitable terms. Additionally, either we or Celgene may opt not to fund a study led by the other under an active license agreement, such as our license agreement with Celgene for the CD19 program (the "CD19 License Agreement"), and if Celgene opts not to fund a Juno-led study, then we would be responsible for the full cost of that study until such time, if ever, that Celgene determines to opt back in to the study at a premium to obtain the right to use data from that study in Celgene's territories. Similarly, our expenses would increase if we exercise an option to co-develop and co-commercialize any product candidate developed, or in-licensed or acquired, by Celgene.

We have never generated any revenue from sales of cell-therapy products and our ability to generate revenue from cell-therapy product sales and become profitable depends significantly on our success in a number of factors.

We have no cell-therapy products approved for commercial sale, have not generated any revenue from cell-therapy product sales, and do not anticipate generating any revenue from cell-therapy product sales until sometime after we have received regulatory approval for the commercial sale of a product candidate. Our ability to generate revenue and achieve profitability depends significantly on our success in many factors, including:

- completing research regarding, and nonclinical and clinical development of, our product candidates;
- obtaining regulatory approvals and marketing authorizations for product candidates for which we complete clinical studies;
- developing a sustainable and scalable manufacturing process for our product candidates, including establishing and maintaining commercially viable supply relationships with third parties and establishing our own manufacturing capabilities and infrastructure;
- launching and commercializing product candidates for which we obtain regulatory approvals and marketing authorizations, either directly or with a collaborator or distributor;
- obtaining market acceptance of our product candidates as viable treatment options, and obtaining adequate coverage, reimbursement, and pricing by third-party payors, integrated delivery networks, and government authorities;

Table of Contents

- addressing any competing technological and market developments;
- Celgene's efforts in its territories to further develop and commercialize the product candidates for which Celgene exercises an option under the Celgene Collaboration Agreement, such as the product candidates in our CD19 program;
- Celgene exercising any other of its options under our Celgene Collaboration Agreement;
- JW Therapeutics (Shanghai) Co., Ltd's ability to develop and commercialize product candidates in China;
- identifying, assessing, acquiring and/or developing new product candidates;
- negotiating favorable terms in any collaboration, licensing, or other arrangements into which we may enter;
- maintaining, protecting, and expanding our portfolio of intellectual property rights, including patents, trade secrets, and know-how; and
- attracting, hiring, and retaining qualified personnel.

Even if one or more of the product candidates that we develop is approved for commercial sale, we anticipate incurring significant costs associated with commercializing any approved product candidate. Our expenses could increase beyond expectations if we are required by the U.S. Food & Drug Administration ("FDA"), or other regulatory agencies, domestic or foreign, to change our manufacturing processes or assays, or to perform clinical, nonclinical, or other types of studies in addition to those that we currently anticipate. If we are successful in obtaining regulatory approvals to market one or more of our product candidates, our revenue will be dependent, in part, upon the size of the markets in the territories for which we gain regulatory approval, the accepted price for the product, the ability to get reimbursement at any price, and whether we own the commercial rights for that territory. If the number of our addressable disease patients is not as significant as we estimate, the indication approved by regulatory authorities is narrower than we expect, or the reasonably accepted population for treatment is narrowed by competition, physician choice or treatment guidelines, we may not generate significant revenue from sales of such products, even if approved. If we are not able to generate revenue from the sale of any approved products, we may never become profitable.

Our technology platform, including our CAR and high-affinity TCR technologies, are new approaches to cancer treatment that present significant challenges.

We have concentrated our research and development efforts on T cell immunotherapy technology, and our future success is highly dependent on the successful development of T cell immunotherapies in general and our CAR and TCR technologies and product candidates in particular. Our approach to cancer treatment aims to alter T cells *ex vivo* through genetic modification using certain viruses designed to reengineer the T cells to recognize specific proteins on the surface or inside cancer cells. Because this is a new approach to cancer immunotherapy and cancer treatment generally, developing and commercializing our product candidates subjects us to a number of challenges, including:

- obtaining regulatory approval from the FDA and other regulatory authorities that have very limited experience with the commercial development of genetically modified T cell therapies for cancer;
- developing and deploying consistent and reliable processes for engineering a patient's T cells ex vivo and infusing the engineered T cells back into the patient;
- conditioning patients with chemotherapy or other non-Juno product treatments in conjunction with delivering each of our products, which may increase the risk of adverse side effects;
- educating medical personnel regarding the potential side effect profile of each of our products, such as the potential adverse side effects related to cytokine release or neurotoxicity;

Table of Contents

- developing processes for the safe administration of these products, including long-term follow-up for all patients who receive our product candidates;
- sourcing clinical and, if approved, commercial supplies for the materials used to manufacture and process our product candidates;
- developing a manufacturing process and distribution network with a cost of goods that allows for an attractive return on investment;
- establishing sales and marketing capabilities after obtaining any regulatory approval to gain market acceptance, and obtaining adequate coverage, reimbursement, and pricing by third-party payors and government authorities; and
- developing therapies for types of cancers beyond those addressed by our current product candidates.

We cannot be sure that our T cell immunotherapy technologies will yield satisfactory products that are safe and effective, scalable, or profitable.

Additionally, because our technology involves the genetic modification of patient cells *ex vivo* using a virus, we are subject to many of the challenges and risks that gene therapies face, including:

- Regulatory requirements governing gene and cell therapy products have changed frequently and may continue to change in the future. To date, only two products that involve the genetic modification of patient cells have been approved in the United States and only one has been approved in the European Union ("EU").
- Genetically modified products in the event of improper insertion of a gene sequence into a patient's chromosome could lead to lymphoma, leukemia or other cancers, or other aberrantly functioning cells.
- Although our viral vectors are not able to replicate, there is a risk with the use of retroviral or lentiviral vectors that they could lead to new or reactivated pathogenic strains of virus or other infectious diseases.
- The FDA recommends a 15-year follow-up observation period for all patients who receive treatment using gene therapies, and we may need to adopt such an observation period for our product candidates.
- Clinical trials using genetically modified cells conducted at institutions that receive funding for recombinant DNA research from the NIH, are subject to review by the Recombinant DNA Advisory Committee ("RAC"). Although the FDA decides whether individual protocols may proceed, the RAC review process can impede the initiation of a clinical trial, even if the FDA has reviewed the study and approved its initiation.

Moreover, public perception of therapy safety issues, including adoption of new therapeutics or novel approaches to treatment, may adversely influence the willingness of subjects to participate in clinical trials, or if approved, of physicians to subscribe to the novel treatment mechanics. Physicians, hospitals and third-party payors often are slow to adopt new products, technologies and treatment practices that require additional upfront costs and training. Physicians may not be willing to undergo training to adopt this novel and personalized therapy, may decide the therapy is too complex to adopt without appropriate training and may choose not to administer the therapy. Based on these and other factors, hospitals and payors may decide that the benefits of this new therapy do not or will not outweigh its costs.

Our near term ability to generate product revenue is dependent on the success of one or more of our CD19 product candidates, each of which are in clinical development and will require significant additional clinical testing before we can seek regulatory approval and begin commercial sales.

Our near term ability to generate product revenue is highly dependent on our ability to obtain regulatory approval of and successfully commercialize one or more of our CD19 product candidates. Our lead product

Table of Contents

candidate, JCAR017, is in clinical development, has been tested in a relatively small number of patients, and will require additional clinical and nonclinical development, regulatory review and approval in each jurisdiction in which we intend to market the product, substantial investment, access to sufficient commercial manufacturing capacity, and significant marketing efforts before we can generate any revenue from product sales. Before obtaining marketing approval from regulatory authorities for the sale of our product candidates, we must conduct extensive clinical studies to demonstrate the safety, purity, and potency of the product candidates in humans. We cannot be certain that any of our product candidates will be successful in clinical studies and they may not receive regulatory approval even if they are successful in clinical studies.

In addition, because our product candidates are based on similar technology, if any of our product candidates encounter safety or efficacy problems, developmental delays, regulatory issues, reagent supply issues, or other problems, our development plans for the affected product candidate and some or all of our other product candidates could be significantly harmed, which would have a material adverse effect on our business. Because JCAR017 is the backbone of our development strategy, a setback for JCAR017 could have a relatively large impact on our plans and business. Further, competitors who are developing products with similar technology may experience problems with their products that could identify problems that would potentially harm our business.

Prior to the Juno-sponsored Phase I trial of JCAR017 and Phase II clinical trial of JCAR015 that began in 2015, third parties had sponsored and conducted all clinical trials of our CD19 product candidates and other product candidates, and our ability to influence the design and conduct of such trials has been limited. We have assumed control over the future clinical and regulatory development of JCAR017 in non-Hodgkin lymphoma, and may do so for additional indications or other product candidates, which will entail additional expenses and may be subject to delay. Any failure by a third party to meet its obligations with respect to the clinical and regulatory development of our product candidates may delay or impair our ability to obtain regulatory approval for our products and result in liability for our company.

Prior to the Juno-sponsored Phase I clinical trial of JCAR017 and the Phase II clinical trial of JCAR015, both of which began in 2015, we had not sponsored any clinical trials relating to our CD19 product candidates or other product candidates. Instead, faculty members at our third-party research institution collaborators, or those institutions themselves, sponsored all clinical trials relating to these product candidates, in each case under their own INDs. We have now assumed control of the overall clinical and regulatory development of JCAR017 in non-Hodgkin lymphoma ("NHL") for future clinical trials. We may assume control over the clinical and regulatory development of other product candidates in the future, in which case we will need to obtain sponsorship of the INDs or file new Juno-sponsored INDs. Failure to obtain, or delays in obtaining, sponsorship of INDs or in filing new Juno-sponsored INDs for these or any other product candidates we determine to advance could negatively affect the timing of our potential future clinical trials. Any such impacts on timing could increase research and development costs and could delay or prevent obtaining regulatory approval for our product candidates, either of which could have a material adverse effect on our business.

Further, even in the event that the IND sponsorship is or has been obtained for existing and new INDs, we did not control the design or conduct of the previous trials. It is possible that the FDA will not accept these previous trials as providing adequate support for future clinical trials, whether controlled by us or third parties, for any of one or more reasons, including the safety, purity, and potency of the product candidate, the degree of product characterization, elements of the design or execution of the previous trials or safety concerns, or other trial results. We may also be subject to liabilities arising from any treatment-related injuries or adverse effects in patients enrolled in these previous trials. As a result, we may be subject to unforeseen third-party claims and delays in our potential future clinical trials. We may also be required to repeat in whole or in part clinical trials previously conducted by our third-party research institution collaborators, which will be expensive and delay the submission and licensure or other regulatory approvals with respect to any of our product candidates. Any such delay or liability could have a material adverse effect on our business.

Although we have assumed control of the overall clinical and regulatory development JCAR017 in NHL going forward, we expect to be dependent on our contractual arrangements with third-party research institution

Table of Contents

collaborators for ongoing and planned trials for our other product candidates, and for JCAR017 other than in NHL, until we determine to assume control of the clinical and regulatory development of those candidates. Such arrangements provide us certain information rights with respect to certain previous, planned, or ongoing trials of our product candidates, including access to and the ability to use and reference the data, including for our own regulatory filings, resulting from such trials. Even after we assume control of the overall clinical and regulatory development of a product candidate, including JCAR017, we will still remain dependent on such contractual data rights for use in our clinical and regulatory development activities. If these obligations are breached by our third-party research institution collaborators, or if the data, or our data rights, prove to be inadequate compared to the first-hand knowledge we might have gained had the completed trials been Juno-sponsored trials, then our ability to design and conduct our corporate-sponsored clinical trials may be adversely affected. Additionally, the FDA may disagree with the sufficiency of the preclinical, manufacturing, or clinical data generated by these prior investigator-sponsored trials, or our interpretation of preclinical, manufacturing, or clinical data from these clinical trials. If so, the FDA may require us to obtain and submit additional preclinical, manufacturing, or clinical data before we may begin our planned trials and/or may not accept such additional data as adequate to begin our planned trials.

Additionally, we may remain dependent on our third-party research institution collaborators for other support services in connection with our Juno-sponsored clinical trials.

We may encounter substantial delays in our clinical trials, or may not be able to conduct our trials on the timelines we expect.

Clinical testing is expensive, time consuming, and subject to uncertainty. We cannot guarantee that any clinical studies will be conducted as planned or completed on schedule, if at all. We expect that the early clinical work performed by our third-party research institution collaborators will help support the filing with the FDA of multiple INDs for our product candidates in the next five years. However, we cannot be sure that we will be able to submit INDs at this rate, and we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin. Moreover, even if these trials begin, issues may arise that could suspend or terminate such clinical trials. A failure of one or more clinical studies can occur at any stage of testing, and our future clinical studies may not be successful. Events that may prevent successful or timely completion of clinical development include:

- inability to generate sufficient preclinical, toxicology, or other in vivo or in vitro data to support the initiation of clinical studies;
- delays in sufficiently developing, characterizing, or controlling a manufacturing process suitable for advanced clinical trials;
- delays in developing suitable assays for screening patients for eligibility for trials with respect to certain product candidates;
- delays in reaching a consensus with regulatory agencies on study design;
- the FDA may not allow us to use the clinical trial data from a research institution to support an IND if we cannot demonstrate the comparability of our product candidates with the product candidate used by the relevant research institution in its clinical studies;
- delays in reaching agreement on acceptable terms with prospective contract research organizations (“CROs”) and clinical study sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical study sites;
- delays in obtaining required institutional review board (“IRB”) approval at each clinical study site;
- imposition of a temporary or permanent clinical hold by regulatory agencies for a number of reasons, including after review of an IND application or amendment, or equivalent application or amendment; as a result of a new safety finding that presents unreasonable risk to clinical trial participants; a

Table of Contents

negative finding from an inspection of our clinical study operations or study sites; developments on trials conducted by competitors for related technology that raises FDA concerns about risk to patients of the technology broadly; or if FDA finds that the investigational protocol or plan is clearly deficient to meet its stated objectives;

- delays in recruiting suitable patients to participate in our clinical studies;
- difficulty collaborating with patient groups and investigators;
- failure by our CROs, other third parties, or us to adhere to clinical study requirements;
- failure to perform in accordance with the FDA's good clinical practice ("GCP") requirements, or applicable regulatory guidelines in other countries;
- transfer of manufacturing processes to Celgene or any other commercialization partner for the manufacture of product candidates in trials outside of the United States;
- delays in having patients complete participation in a study or return for post-treatment follow-up;
- patients dropping out of a study;
- occurrence of adverse events associated with the product candidate that are viewed to outweigh its potential benefits;
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols;
- changes in the standard of care on which a clinical development plan was based, which may require new or additional trials;
- the cost of clinical studies of our product candidates being greater than we anticipate;
- clinical studies of our product candidates producing negative or inconclusive results, which may result in our deciding, or regulators requiring us, to conduct additional clinical studies or abandon product development programs;
- transfer of manufacturing processes from our academic collaborators to larger-scale facilities operated by either a contract manufacturing organization (a "CMO") or by us, and delays or failure by our CMOs or us to make any necessary changes to such manufacturing process;
- delays or failure to secure supply agreements with suitable reagent suppliers, or any failures by suppliers to meet our quantity or quality requirements for necessary reagents; and
- delays in manufacturing, testing, releasing, validating, or importing/exporting sufficient stable quantities of our product candidates for use in clinical studies or the inability to do any of the foregoing.

Any inability to successfully complete preclinical and clinical development could result in additional costs to us or impair our ability to generate revenue. In addition, if we make manufacturing or formulation changes to our product candidates, we may be required to or we may elect to conduct additional studies to bridge our modified product candidates to earlier versions. Clinical study delays could also shorten any periods during which our products have patent protection and may allow our competitors to bring products to market before we do, which could impair our ability to successfully commercialize our product candidates and may harm our business and results of operations.

Table of Contents

We have entered into collaborations, including our Celgene collaboration, and strategic alliances, and may enter into additional arrangements like these in the future, and we may not realize the anticipated benefits of such collaborations or alliances.

Research and development collaborations, including those we have entered into with Celgene, Fate Therapeutics, Inc. ("Fate"), Editas Medicine, Inc. ("Editas"), and MedImmune Limited ("MedImmune"), are subject to numerous risks, which may include the following:

- collaborators have significant discretion in determining the efforts and resources that they will apply to a collaboration, and may not commit sufficient efforts and resources, or may misapply those efforts and resources;
- collaborators may not pursue development and commercialization of collaboration product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results or changes in their strategic focus;
- collaborators may delay, provide insufficient resources to, or modify or stop clinical trials for collaboration product candidates;
- collaborators could develop or acquire products outside of the collaboration that compete directly or indirectly with our products or product candidates (for instance, Celgene and bluebird bio are collaborating on an anti-B-cell maturation antigen ("BCMA") CAR T product candidate);
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our product candidates, or that result in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated and, if terminated, may result in a need for additional capital and personnel to pursue further development or commercialization of the applicable product candidates; and
- collaborators may own or co-own intellectual property covering our products that results from our collaborating with them, and in such cases, we may not have the exclusive right to commercialize such intellectual property.

In particular, for product candidates in our CD19 program and product candidates from any other programs for which Celgene opts to exercise its options under the Celgene Collaboration Agreement, we may have limited influence or control over their approaches to development and commercialization in the territories in which they lead development and commercialization, including the choice of which product candidates Celgene determines to advance in those territories. Although we will still lead development and commercialization activities in North America and China for our product candidates arising from our CD19 program and any other program for which Celgene exercises an option, Celgene's development and commercialization activities in the territories where it is the lead party may adversely impact our own efforts in North America and China and lead to changes to clinical and regulatory development strategy for associated product candidates that may impact development timelines. Celgene will also require some level of assistance from us with respect to product candidates from the CD19 program and product candidates from any other programs it opts into, and this assistance could be burdensome on our organization and resources and disrupt our own development and commercialization activities. Celgene will also be subject to many of the same risks that are set forth in this "Risk Factors" section pertaining to operations and government regulation, which may adversely affect Celgene's ability to develop and commercialize collaboration products.

Table of Contents

In early 2016, we and WuXi AppTec formed a new company, JW Therapeutics (Shanghai) Co., Ltd, to develop and commercialize cell-based immunotherapies for patients with hematologic and solid organ cancers in China. We have limited control over JW Therapeutics (Shanghai) Co., Ltd and so we will be subject to many of the same risks set forth above with respect to collaborations. JW Therapeutics (Shanghai) Co., Ltd will also be subject to many of the same risks that are set forth in this "Risk Factors" section pertaining to operations, government regulation, and intellectual property, which may adversely affect JW Therapeutics (Shanghai) Co., Ltd's ability to develop and commercialize products.

We may form or seek further strategic alliances, create joint ventures or collaborations, or enter into additional licensing arrangements with third parties that we believe will complement or augment our development and commercialization efforts with respect to our product candidates and any future product candidates that we may develop. Such alliances will be subject to many of the risks set forth above. Moreover, any of these relationships may require us to incur non-recurring and other charges, increase our near and long-term expenditures, issue securities that dilute our existing stockholders, or disrupt our management and business. In addition, we face significant competition in seeking appropriate strategic partners and the negotiation process is time-consuming and complex.

As a result of these risks, we may not be able to realize the benefit of our existing collaborations or any future collaborations or licensing agreements we may enter into. Any delays in entering into new collaborations or strategic partnership agreements related to our product candidates could delay the development and commercialization of our product candidates in certain geographies, which could harm our business prospects, financial condition, and results of operations.

The FDA or comparable foreign regulatory authorities may disagree with our regulatory plans, including our plans to seek accelerated approval, and we may fail to obtain regulatory approval of our product candidates.

We are conducting a Phase I trial in adult relapsed or refractory ("r/r") NHL with JCAR017, which we refer to as the TRANSCEND trial, and are currently enrolling the cohort that we believe may support registration, and we plan to conduct additional clinical trials in other B cell malignancies, including r/r chronic lymphocytic leukemia ("CLL"), adult r/r B cell acute lymphoblastic leukemia ("ALL"), and pediatric r/r ALL, using this product candidate or a next generation product candidate. If the results of these trials are sufficiently compelling, we intend to discuss with the FDA the potential for filing biologics license applications ("BLAs") for accelerated approval of the associated product candidates as treatments for patients who are refractory to currently approved treatments in these indications.

The FDA generally requires a BLA to be supported by two adequate and well-controlled Phase III studies or one large and robust, well-controlled Phase III study in the patient population being studied that provides substantial evidence that a biologic is safe, pure and potent. Phase III clinical studies typically involve hundreds of patients, have significant costs and take years to complete. However, product candidates studied for their safety and effectiveness in treating serious or life-threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may be eligible for accelerated approval and may be approved on the basis of adequate and well-controlled clinical trials establishing that the product candidate 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 may require a sponsor of a drug or biologic receiving accelerated approval to perform post-marketing studies to verify and describe the predicted effect on irreversible morbidity or mortality or other clinical endpoint, and the drug or biologic may be subject to withdrawal procedures by the FDA that are more accelerated than those available for regular approvals. We believe our accelerated approval strategy is warranted given the currently limited alternative therapies for patients with r/r NHL, r/r CLL, and r/r ALL, but the FDA may not agree or competing or alternative therapies may enter the market that

Table of Contents

cause the FDA to determine that the accelerated approval framework is no longer appropriate in those indications. The FDA may ultimately require one or multiple Phase III clinical trials prior to approval, particularly because our product candidates are novel and personalized treatments.

As part of its marketing authorization process, the European Medicines Agency ("EMA") may grant marketing authorizations on the basis of less complete data than is normally required, when, for certain categories of medicinal products, doing so may meet unmet medical needs of patients and serve the interest of public health. In such cases, it is possible for the Committee for Medicinal Products for Human Use ("CHMP") to recommend the granting of a marketing authorization, subject to certain specific obligations to be reviewed annually, which is referred to as a conditional marketing authorization. This may apply to medicinal products for human use that fall under the jurisdiction of the EMA, including those that aim at the treatment, the prevention, or the medical diagnosis of seriously debilitating diseases or life-threatening diseases and those designated as orphan medicinal products.

A conditional marketing authorization may be granted when the CHMP finds that, although comprehensive clinical data referring to the safety and efficacy of the medicinal product have not been supplied, all the following requirements are met:

- the risk-benefit balance of the medicinal product is positive;
- it is likely that the applicant will be in a position to provide the comprehensive clinical data;
- unmet medical needs will be fulfilled; and
- the benefit to public health of the immediate availability on the market of the medicinal product concerned outweighs the risk inherent in the fact that additional data are still required.

The granting of a conditional marketing authorization is restricted to situations in which only the clinical part of the application is not yet fully complete. Incomplete nonclinical or quality data may only be accepted if duly justified and only in the case of a product intended to be used in emergency situations in response to public-health threats.

Conditional marketing authorizations are valid for one year, on a renewable basis. The holder will be required to complete ongoing studies or to conduct new studies with a view to confirming that the benefit-risk balance is positive. In addition, specific obligations may be imposed in relation to the collection of pharmacovigilance data.

The granting of a conditional marketing authorization will allow medicines to reach patients with unmet medical needs earlier than might otherwise be the case and will ensure that additional data on a product are generated, submitted, assessed and acted upon. Although we may seek a conditional marketing authorization for one or more of our product candidates by the EMA, the EMA or CHMP may ultimately not agree that the requirements for such conditional marketing authorization have been satisfied. Even if conditional marketing authorization is granted, we cannot guarantee that the EMA or CHMP will renew the authorization annually. Celgene may seek conditional marketing approval in the EU for our CD19 product candidates.

Our clinical trial results may also not support approval, whether accelerated approval, conditional marketing authorizations, or standard approval procedures. The results of preclinical and clinical studies may not be predictive of the results of later-stage clinical trials, and product candidates in later stages of clinical trials may fail to show the desired safety and efficacy despite having progressed through preclinical studies and initial clinical trials. In addition, our product candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- the population studied in the clinical program may not be sufficiently broad or representative to assure safety in the full population for which we seek approval;

Table of Contents

- we may be unable to demonstrate that our product candidates' risk-benefit ratios for their proposed indications are acceptable;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that the clinical and other benefits of our product candidates outweigh their safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to the satisfaction of the FDA or comparable foreign regulatory authorities to support the submission of a BLA or other comparable submission in foreign jurisdictions or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes, our own manufacturing facilities, or a third-party manufacturer's facilities with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

Further, failure to obtain approval for any of the above reasons may be made more likely by the fact that the FDA and other regulatory authorities have very limited experience with commercial development of genetically engineered T cell therapies for cancer. Failure to obtain regulatory approval to market any of our product candidates would significantly harm our business, results of operations, and prospects.

Our clinical trials may fail to demonstrate adequately the safety and efficacy of our product candidates, which would prevent or delay regulatory approval and commercialization.

The clinical trials and manufacturing of our product candidates are, and the manufacturing and marketing of our products will be, subject to extensive and rigorous review and regulation by numerous government authorities in the United States and in other countries where we intend to test and market our product candidates. Before obtaining regulatory approvals for the commercial sale of any of our product candidates, we must demonstrate through lengthy, complex and expensive preclinical testing and clinical trials that our product candidates are both safe and effective for use in each target indication. In particular, because our product candidates are subject to regulation as biological drug products, we will need to demonstrate that they are safe, pure, and potent for use in their target indications. Each product candidate must demonstrate an adequate risk versus benefit profile in its intended patient population and for its intended use. The risk/benefit profile required for product licensure will vary depending on these factors and may include not only the ability to show tumor shrinkage, but also adequate duration of response, a delay in the progression of the disease, and/or an improvement in survival, and an acceptable safety profile. For example, response rates from the use of our product candidates may not be sufficient to obtain regulatory approval unless we can also show an adequate duration of response. Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of preclinical studies and early clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials. Similarly, the final results from a clinical trial may not be as good as interim results reported earlier in the same clinical trial. Additionally, the results of studies in one set of patients or line of treatment may not be predictive of those obtained in another. We expect there may be greater variability in results for products processed and administered on a patient-by-patient basis, as anticipated for our product candidates, than for "off-the-shelf" products, like many other drugs. There is typically an extremely high rate of attrition from the failure of product candidates proceeding through clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy profile despite having progressed through preclinical studies and initial clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in

Table of Contents

advanced clinical trials due to lack of efficacy or unacceptable safety issues, notwithstanding promising results in earlier trials. Most product candidates that begin clinical trials are never approved by regulatory authorities for commercialization.

Data from studies conducted by the third-party research institutions that are our collaboration partners, such as FHCRC, MSK, Seattle Children's Research Institute ("SCRI"), and the National Cancer Institute ("NCI"), should not be relied upon as evidence that later or larger-scale clinical trials will succeed. Some future trials may have different patient populations than current studies and will test our product candidates in different indications, among other differences. In addition, our manufacturing processes for our CD19 product candidates include what we believe to be process improvements that are not part of the production processes that have been used in the clinical trials conducted by the research institutions. Accordingly, our results with our CD19 product candidates may not be consistent with the results of the clinical trials conducted by our research institute collaborators.

In addition, even if such trials are successfully completed, we cannot guarantee that the FDA or foreign regulatory authorities will interpret the results as we do, and more trials could be required before we submit our product candidates for approval. To the extent that the results of the trials are not satisfactory to the FDA or foreign regulatory authorities for support of a marketing application, we may be required to expend significant resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates.

Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, limit their commercial potential, or result in significant negative consequences.

As with most biological drug products, use of our product candidates could be associated with side effects or adverse events which can vary in severity from minor reactions to death and in frequency from infrequent to prevalent. It is not uncommon for there to be treatment-related deaths in clinical trials in advanced cancer patients, and even some standard of care treatments, such as HSCT, are associated with a level of treatment-related mortality. Undesirable side effects or unacceptable toxicities caused by our product candidates could cause us or regulatory authorities to interrupt, delay, or halt clinical trials. As of a data cutoff date of April 3, 2017 for JCAR015 and May 4, 2017 for JCAR017, treatment-emergent adverse events, whether or not treatment related, occurring in at least 25% of patients across trials conducted under a Juno-sponsored IND include cytokine release syndrome ("CRS"), nausea, diarrhea, vomiting, decreased appetite, fatigue, headache, hypokalemia, neutropenia, and events of neurotoxicity, including confusional state, aphasia, encephalopathy, tremor, muscular weakness and somnolence. Similar adverse events have been observed in trials conducted by our collaborators. Characteristic symptoms of CRS include fever, low blood pressure, nausea, difficulty breathing, and oxygen deficiency. Some of these treatment-emergent adverse events from our or our collaborators' clinical trials have required admission to the intensive care unit and, in some severe cases, have resulted in death. Fatal events of cerebral edema have also been observed.

Undesirable side effects or deaths in clinical trials with our product candidates may cause the FDA or comparable foreign regulatory authorities to place a clinical hold on the associated clinical trials or otherwise to delay or deny approval of our product candidates for any or all targeted indications. For instance, in July 2016, the FDA placed our JCAR015 Phase II trial in r/r ALL on clinical hold after we observed an increased incidence of severe neurotoxicity, including two patients who died in late June 2016 from cerebral edema. After a protocol amendment, the clinical hold was removed a few days later and the trial resumed. However, in November 2016, the FDA again placed our trial on clinical hold after the occurrence of two more deaths from cerebral edema in the trial. Following the November 2016 events, we conducted an investigation into the toxicity and identified multiple factors that may have contributed to this increased risk, including patient specific factors, the conditioning chemotherapy patients received, and factors related to the product, but we cannot know that we have identified the root causes of the toxicity to sufficiently prevent its occurrence in the future. We subsequently

Table of Contents

determined to discontinue Juno development of JCAR015. We cannot provide any assurances that there will not be further treatment-related severe adverse events or deaths with other product candidates, from cerebral edema or otherwise, that the trials for those other product candidates will not be placed on clinical hold in the future, or that patient recruitment for trials with our other product candidates will not be adversely impacted by the events with JCAR015, any of which could materially and adversely affect our business and prospects.

Negative side effects could also result in a more restrictive label for any product that is approved. Side effects such as toxicity or other safety issues associated with the use of our product candidates could also require us or our collaborators to perform additional studies or halt development or sale of these product candidates.

Treatment-related side effects or clinical holds could also affect patient recruitment or the ability of enrolled subjects to complete the trial, or could result in potential product liability claims. In addition, these side effects may not be appropriately or timely recognized or managed by the treating medical staff, particularly outside of the research institutions that collaborate with us, as toxicities resulting from personalized T cell therapy are not normally encountered in the general patient population and by medical personnel. We expect to have to train medical personnel using our product candidates to understand their side effect profiles, both for our planned clinical trials and upon any commercialization of any product candidates. Inadequate training in recognizing or managing the potential side effects of our product candidates could result in adverse effects to patients, including death. Any of these occurrences may materially and adversely harm our business, financial condition and prospects.

Undesirable side effects or deaths in clinical trials conducted by others in the engineered T cell therapy field may also adversely impact our own prospects with the FDA or comparable foreign regulatory authorities and may adversely impact our own patient recruitment activities if enthusiasm for the prospects of engineered T cell therapy generally is diminished.

Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by such products, including during any long-term follow-up observation period recommended or required for patients who receive treatment using our products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw approvals of such product;
- regulatory authorities may require additional warnings on the label;
- we may be required by the FDA to create a risk evaluation and mitigation strategy (“REMS”) plan, which could include a medication guide outlining the risks of such side effects for distribution to patients, a communication plan for healthcare providers, and/or other elements to assure safe use;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of the foregoing could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved, and could significantly harm our business, results of operations, and prospects.

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

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

- the size and nature of the patient population;
- the patient eligibility criteria defined in the protocol;

Table of Contents

- the size of the study population required for analysis of the trial's primary endpoints;
- the proximity of patients to trial sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- competing clinical trials for similar therapies or other new therapeutics not involving T cell based immunotherapy;
- clinicians' and patients' perceptions as to the potential advantages and side effects of the product candidate being studied in relation to other available therapies, including any new drugs or treatments that may be approved for the indications we are investigating;
- our ability to obtain and maintain patient consents; and
- the risk that patients enrolled in clinical trials will not complete a clinical trial.

In addition, our clinical trials will compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition will reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Because 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 will reduce the number of patients who are available for our clinical trials at such clinical trial sites. Moreover, because our product candidates represent a departure from more commonly used methods for cancer treatment, potential patients and their doctors may be inclined to use conventional therapies, such as chemotherapy and hematopoietic cell transplantation, rather than enroll patients in any future clinical trial.

Even if we are able to enroll a sufficient number of patients in our clinical 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.

Clinical trials are expensive, time-consuming and difficult to design and implement, and our clinical trial costs may be higher than for more conventional therapeutic technologies or drug products.

Clinical trials are expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. Because our product candidates are based on new technologies and manufactured on a patient-by-patient basis, we expect that they will require extensive research and development and have substantial manufacturing costs. In addition, costs to treat patients with relapsed/refractory cancer and to treat potential side effects that may result from our product candidates can be significant. Some clinical trial sites may not bill, or obtain coverage from, Medicare, Medicaid, or other third-party payors for some or all of these costs for patients enrolled in our clinical trials, and we may be required by those trial sites to pay such costs. Accordingly, our clinical trial costs are likely to be significantly higher per patient than those of more conventional therapeutic technologies or drug products. In addition, our proposed personalized product candidates involve several complex and costly manufacturing and processing steps, the costs of which will be borne by us. Depending on the number of patients we ultimately enroll in our trials, and the number of trials we may need to conduct, our overall clinical trial costs may be higher than for more conventional treatments.

Table of Contents

Research and development of biopharmaceutical products is inherently risky. We may not be successful in our efforts to use and enhance our technology platform and CAR and TCR technologies to create a pipeline of product candidates and develop commercially successful products, or we may expend our limited resources on programs that do not yield a successful product candidate and fail to capitalize on product candidates or diseases that may be more profitable or for which there is a greater likelihood of success. If we fail to develop additional product candidates, our commercial opportunity will be limited.

We and our collaborators are simultaneously pursuing clinical development of multiple product candidates developed employing our CAR and TCR technologies. We are at an early stage of development and our technology platform has not yet led, and may never lead, to approved or commercially successful products.

Even if we are successful in continuing to build our pipeline, obtaining regulatory approvals and commercializing additional product candidates may require substantial additional funding and are prone to the risks of failure inherent in medical product development.

Investment in biopharmaceutical product development involves significant risk that any potential product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, gain regulatory approval, and become commercially viable. We cannot provide you any assurance that we will be able to successfully advance any of these additional product candidates through the development process. Our research programs may initially show promise in identifying potential product candidates, yet fail to yield product candidates for clinical development or commercialization for many reasons, including the following:

- our platform may not be successful in identifying additional product candidates;
- we may not be able or willing to assemble sufficient resources to acquire or discover additional product candidates;
- our product candidates may not succeed in preclinical or clinical testing;
- a product candidate may on further study be shown to have harmful side effects or other characteristics that indicate it is unlikely to be effective or otherwise does not meet applicable regulatory criteria;
- competitors may develop alternatives that render our product candidates obsolete or less attractive;
- product candidates we develop may nevertheless be covered by third parties' patents or other exclusive rights;
- the market for a product candidate may change during our program so that the continued development of that product candidate is no longer reasonable;
- a product candidate may not be capable of being produced in commercial quantities at an acceptable cost, or at all; and
- a product candidate may not be accepted as safe and effective by patients, the medical community or third-party payors, if applicable.

If any of these events occur, we may be forced to abandon our development efforts for a program or programs, or we may not be able to identify, discover, develop, or commercialize additional product candidates, which would have a material adverse effect on our business and could potentially cause us to cease operations.

Even if we receive FDA approval to market our product candidates, whether for the treatment of cancers or other diseases, we cannot assure you that any such product candidates will be successfully commercialized, widely accepted in the marketplace or more effective than other commercially available alternatives. Further, because of our limited financial and managerial resources, we are required to focus our research programs on certain product candidates and on specific diseases. As a result, we may fail to capitalize on viable commercial products or profitable market opportunities, be required to forgo or delay pursuit of opportunities with other product candidates

Table of Contents

or other diseases that may later prove to have greater commercial potential, 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 retain sole development and commercialization rights. For additional information regarding the factors that will affect our ability to achieve revenue from product sales, see the risk factor above "—We have never generated any revenue from sales of cell-therapy products and our ability to generate revenue from cell-therapy product sales and become profitable depends significantly on our success in a number of factors."

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

Our product candidates are biologics and the process of manufacturing our products is complex, highly-regulated and subject to multiple risks. The manufacture of our product candidates involves complex processes, including harvesting T cells from patients, genetically modifying the T cells *ex vivo,* multiplying the T cells to obtain the desired dose, and ultimately infusing the T cells back into a patient's body. As a result of the complexities, the cost to manufacture biologics in general, and our genetically modified cell product candidates in particular, is generally higher than traditional small molecule chemical compounds, and the manufacturing process is less reliable and is more difficult to reproduce. Our manufacturing process will be susceptible to product loss or failure, or product variation that may adversely impact patient outcomes, due to logistical issues associated with the collection of white blood cells, or starting material, from the patient, shipping such material to the manufacturing site, shipping the final product back to the patient, and infusing the patient with the product, manufacturing issues or different product characteristics resulting from the differences in patient starting materials, variations between reagent lots, interruptions in the manufacturing process, contamination, equipment or reagent failure, improper installation or operation of equipment, vendor or operator error, inconsistency in cell growth, and variability in product characteristics. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects, and other supply disruptions. If for any reason we lose a patient's starting material or later-developed product at any point in the process, the manufacturing process for that patient will need to be restarted and the resulting delay may adversely affect that patient's outcome. 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. Because our product candidates are manufactured for each particular patient, we will be required to maintain a chain of identity with respect to materials as they move from the patient to the manufacturing facility, through the manufacturing process, and back to the patient. Maintaining such a chain of identity is difficult and complex, and failure to do so could result in adverse patient outcomes, loss of product, or regulatory action including withdrawal of our products from the market, if licensed.

Historically, our product candidates have been manufactured using unoptimized processes by our third-party research institution collaborators that we do not intend to use for more advanced clinical trials or commercialization. Although we are working to develop commercially viable processes, including for JCAR017, doing so is a difficult and uncertain task, and there are risks associated with scaling to the level required for advanced clinical trials or commercialization, including, among others, cost overruns, potential problems with process scale-out, process reproducibility, stability issues, lot consistency, and timely availability of reagents or raw materials. We will also need to build out and implement electronic systems to support scale and reduce human error, which may be difficult to do in a timely manner. As a result of these challenges, we may experience delays in our clinical development and/or commercialization plans. We may ultimately be unable to reduce the cost of goods for our product candidates to levels that will allow for an attractive return on investment if and when those product candidates are commercialized.

We also may make changes to our manufacturing process at various points during development, and even after commercialization, for various reasons, such as controlling costs, achieving scale, decreasing processing time,

Table of Contents

increasing manufacturing success rate, or other reasons. During the course of the TRANSCEND trial, we have made changes to the JCAR017 manufacturing process to support commercialization. These or other changes to our manufacturing process carry the risk that they will not achieve their intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of our ongoing clinical trials, future clinical trials, or the performance of the product once commercialized. In some circumstances, changes in the manufacturing process may require us to perform *ex vivo* comparability studies and to collect additional data from patients prior to undertaking more advanced clinical trials. For instance, changes in our process during the course of clinical development may require us to show the comparability of the product used in earlier clinical phases or at earlier portions of a trial to the product used in later clinical phases or later portions of the trial. We may also make further changes to our manufacturing process before or after commercialization, and such changes may require us to show the comparability of the resulting product to the product used in the clinical trials using earlier processes. We may be required to collect additional clinical data from any modified process prior to obtaining marketing approval for the product candidate produced with such modified process. If clinical data are not ultimately comparable to that seen in the earlier trials or earlier in the same trial in terms of safety or efficacy, we may be required to make further changes to our process and/or undertake additional clinical testing, either of which could significantly delay the clinical development or commercialization of the associated product candidate.

We expect our manufacturing strategy will involve the use of our manufacturing facility in Bothell, Washington, and potentially additional Juno-operated manufacturing facilities or one or more CMOs, to manufacture our product candidates. We also plan to manufacture certain of the reagents used for making our product candidates ourselves. We expect that development of our own manufacturing capabilities, as well as manufacturing some of our own reagents, will provide us with enhanced control of material supply for both clinical trials and the commercial market, enable the more rapid implementation of process changes, and allow for better long-term margins. However, we have limited experience as a company manufacturing product candidates for use in the clinic and no experience as a company manufacturing product candidates for commercial supply, and we have only limited experience (through our German subsidiary) in manufacturing reagents. We may never be successful in manufacturing product candidates or reagents in sufficient quantities or with sufficient quality for clinical or commercial use. We may establish multiple manufacturing facilities as we expand our commercial footprint to multiple geographies, which may lead to regulatory delays or prove costly.

Even if we are successful in developing our manufacturing capabilities sufficient for clinical and commercial supply, our manufacturing capabilities could be affected by cost-overruns, unexpected delays, equipment failures, labor shortages, operator error, natural disasters, availability of qualified personnel, difficulties with logistics and shipping, problems regarding yields or stability of product, contamination or other quality control issues, power failures, and numerous other factors that could prevent us from realizing the intended benefits of our manufacturing strategy and have a material adverse effect on our business.

Furthermore, if contaminants are discovered in our supply of our product candidates or in our manufacturing facilities or those of our CMOs, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We cannot assure you that any stability failures or other issues relating to the manufacture of our product candidates will not occur in the future. Additionally, we and our CMOs may experience manufacturing difficulties due to resource constraints or as a result of labor disputes or unstable political environments. If we or our CMOs were to encounter any of these difficulties, our ability to provide our product candidate to patients in clinical trials, or to provide product for treatment of patients once approved, would be jeopardized.

In addition, the manufacturing process for any products that we may develop is subject to FDA and foreign regulatory authority approval process, and we will need to meet, and our CMOs will need to meet, all applicable FDA and foreign regulatory authority requirements on an ongoing basis. If we or our CMOs are unable to reliably produce products to specifications acceptable to the FDA or other regulatory authorities, we may not obtain or maintain the approvals we need to commercialize such products. Even if we obtain regulatory approval for any of our product candidates, there is no assurance that either we or our CMOs will be able to manufacture

Table of Contents

the approved product to specifications acceptable to the FDA or other regulatory authorities, to produce it in sufficient quantities to meet the requirements for the potential launch of the product, or to meet potential future demand. Any of these challenges could delay completion of clinical trials, require bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidate, impair commercialization efforts, increase our cost of goods, and have an adverse effect on our business, financial condition, results of operations and growth prospects.

We also will need to assist Celgene with the transfer of our manufacturing processes for our CD19 product candidates, and product candidates for any other programs for which they exercise an option, to geographies outside of North America and China. The transfer of process to Celgene, or to CMOs selected by Celgene, and the actual manufacture of our product candidates by Celgene or its selected CMOs, will be subject to the same types of risk as set forth above and may not ultimately be successful or may take longer to succeed than expected, which could delay or impair development and commercialization activities in those geographies, which would have an adverse effect on our business. Such transfer activities will also require a significant amount of attention from our personnel, which may disrupt our other development and commercialization activities, which in turn may have an adverse effect on our business. Additionally, in the interim we expect we will need to manufacture product candidates out of our existing facilities for use in clinical trials in the Celgene territories, which may disrupt our own clinical activities and, to the extent we are not able to produce product candidate in the volumes required by Celgene or experience difficulties coordinating manufacturing in the United States with patient material collection and treatment centers in the Celgene territories, may also lead to delays in development plans in such Celgene territories. To the extent product candidates need to be shipped across international borders for use in clinical trials in the Celgene territories, there may be shipping, customs, or other import/export related delays that could lead to a loss of a patient's manufactured product, which could prevent patients from being treated or require a new batch to be manufactured from the patient's starting material. Losses of this sort could cause delays in the associated clinical trials, which could delay or prevent the clinical development and commercialization of our product candidates in the Celgene territories.

We rely on third parties for certain aspects of the manufacture our clinical product supplies, and we intend to rely on third parties for at least a portion of the manufacturing process of our product candidates, if approved. Our business could be harmed if those third parties fail to provide us with sufficient quantities of product or fail to do so at acceptable quality levels or prices.

We currently rely on outside vendors for certain aspects of the manufacturing process for our product candidates. We have not yet caused our product candidates to be manufactured or processed on a commercial scale and may not be able to do so for any of our product candidates. Although our manufacturing and processing approach originates with the approach undertaken by our third-party research institution collaborators, we have limited experience in managing the T cell engineering process, and our process may be more difficult or expensive than the approaches in use by others. We have made and will continue to make changes as we work to optimize the manufacturing process, and we cannot be sure that even minor changes in the process will not result in significantly different T cells that may not be as safe and effective as any T cell therapy deployed by our third-party research institution collaborators.

Although we have brought a Juno-operated manufacturing facility online for clinical manufacturing, we also intend to continue to use third parties as part of our manufacturing process, including for the manufacturing of critical reagents and materials, such as viral vector. Our anticipated reliance on a limited number of third-party manufacturers exposes us to the following risks:

- We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers is limited and the FDA must approve any manufacturers. This approval would require new testing and good manufacturing practices compliance inspections by FDA. In addition, a new manufacturer would have to be educated in, or develop substantially equivalent processes for, production of the reagents and materials used in the manufacturing of our products.

Table of Contents

- Our manufacturers may have little or no experience with autologous cell products, which are products made from a patient's own cells, and therefore may require a significant amount of support from us in order to implement and maintain the infrastructure and processes required to manufacture our product candidates.
- Our third-party manufacturers might be unable to timely manufacture reagents and materials used in the manufacture of our product candidates, or produce the quantity and quality required to meet our clinical and commercial needs, if any.
- Contract manufacturers may not be able to execute our manufacturing procedures and other logistical support requirements appropriately.
- Our future contract manufacturers may not perform as agreed, may not devote sufficient resources us, or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store, and distribute the materials or reagents used in the manufacture of our product candidates.
- Manufacturers are subject to ongoing periodic unannounced inspection by the FDA and corresponding state agencies to ensure strict compliance with current good manufacturing practices ("cGMPs") and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers' compliance with these regulations and standards.
- We may not own, or may have to share, the intellectual property rights to any improvements made by our third-party manufacturers in the manufacturing process for our products, or in the manufacture of the custom materials or reagents used in the manufacture thereof.
- Our third-party manufacturers could breach or terminate their agreement with us.
- Raw materials, reagents, and components used in the manufacturing process, particularly those for which we have no other source or supplier, may not be available or may not be suitable or acceptable for use due to material or component defects, or may introduce variability into our final products.
- Our contract manufacturers and critical reagent suppliers may be subject to inclement weather, as well as natural or man-made disasters.
- Our contract manufacturers may have unacceptable or inconsistent product quality success rates and yields.

Celgene may similarly rely on third parties for manufacturing activities in the territories where Celgene leads development and commercialization of product candidates from programs for which it has exercised an option, and therefore Celgene's activities may be subject to the same risks. Each of these risks could delay or prevent the completion of clinical trials or the approval of any of our product candidates by the FDA or comparable regulatory authorities outside of the United States, result in higher costs, or adversely impact commercialization of our product candidates. In addition, we will rely on third parties to perform certain specification tests on our product candidates prior to delivery to patients. If these tests are not appropriately done and test data are not reliable, patients could be put at risk of serious harm and the FDA or comparable regulatory authorities outside of the United States could require additional clinical trials or place significant restrictions on our company until deficiencies are remedied.

Cell-based therapies rely on the availability of reagents, specialized equipment, and other specialty materials, which may not be available to us on acceptable terms or at all. For some of these reagents, equipment, and materials, we rely or may rely on sole source vendors or a limited number of vendors, which could impair our ability to manufacture and supply our products.

Manufacturing our product candidates requires many reagents, which are substances used in our manufacturing processes to bring about chemical or biological reactions, and other specialty materials and

Table of Contents

equipment, some of which are manufactured or supplied by small companies with limited resources and experience to support commercial biologics production. We currently depend on a limited number of vendors for certain materials and equipment used in the manufacture of our product candidates. Some of these suppliers may not have the capacity to support commercial products manufactured under cGMP by biopharmaceutical firms or may otherwise be ill-equipped to support our needs. Reagents and other key materials from these suppliers may have inconsistent attributes and introduce variability into our manufactured product candidates, which may contribute to variable patient outcomes and possible adverse events. We also do not have supply contracts with many of these suppliers and may not be able to obtain supply contracts with them on acceptable terms or at all. Accordingly, we may experience delays in receiving key materials and equipment to support clinical or commercial manufacturing.

For some of these reagents, equipment, and materials, we rely and may in the future rely on sole source vendors or a limited number of vendors. An inability to continue to source product from any of these suppliers, which could be due to regulatory actions or requirements affecting the supplier, adverse financial or other strategic developments experienced by a supplier, labor disputes or shortages, unexpected demands, or quality issues, could adversely affect our ability to satisfy demand for our product candidates, which could adversely and materially affect our product sales and operating results or our ability to conduct clinical trials, either of which could significantly harm our business.

As we continue to develop and scale our manufacturing process, we expect that we will need to obtain rights to and supplies of certain materials and equipment to be used as part of that process. We may not be able to obtain rights to such materials on commercially reasonable terms, or at all, and if we are unable to alter our process in a commercially viable manner to avoid the use of such materials or find a suitable substitute, it would have a material adverse effect on our business. Even if we are able to alter our process so as to use other materials or equipment, such a change may lead to a delay in our clinical development and/or commercialization plans. If such a change occurs for product candidate that is already in clinical testing, the change may require us to perform both *ex vivo* comparability studies and to collect additional data from patients prior to undertaking more advanced clinical trials.

We do and will continue to rely in significant part on outside scientists and their third-party research institutions for research and development and early clinical testing of our product candidates. These scientists and institutions may have other commitments or conflicts of interest, which could limit our access to their expertise and harm our ability to leverage our technology platform.

We rely to a significant extent at present on our third-party research institution collaborators for research and development capabilities. Currently, SCRI is conducting a Phase I trial using JCAR023 to address refractory or recurrent pediatric neuroblastoma; FHCRC is conducting a Phase I/II clinical trial using JCAR014 to address r/r ALL, NHL, and CLL, including in combination with ibrutinib in CLL, a Phase Ib trial using JCAR014 in combination with durvalumab to address r/r NHL, a Phase I trial using a CD19-directed product candidate incorporating a fully human binding domain to address certain r/r B cell malignancies, a Phase I trial using JCAR024 to address advanced stage ROR-1 expressing cancers, a Phase I/II trial using JTCR016 to address newly diagnosed or relapsed high risk adult myeloid leukemia, and a Phase I/II trial using JTCR016 to address advanced NSCLC and mesothelioma; MSK is conducting Phase I clinical trial using a fully-human BCMA-directed CAR product candidate to address r/r multiple myeloma, a Phase I trial with JCAR020 to address advanced stage ovarian cancer, and a Phase I trial with a CD19/4-1BBL “armored” CAR to address r/r CLL; and Peter MacCallum Cancer Centre is conducting a Phase I clinical trial using a Lewis Y-directed CAR T cell product candidate to address advanced stage lung cancer and other Lewis Y-expressing advanced stage tumors. SCRI is also conducting the Phase II portion of a Phase I/II trial with a CD19-directed CAR in pediatric patients with r/r ALL. SCRI has used a manufacturing process for many patients in the trial’s Phase II portion that is different than the process SCRI used in the Phase I portion of the trial and the process we use in the TRANSCEND trial to manufacture JCAR017. The difference in manufacturing process may contribute to meaningful product differences that could affect patient outcomes or our ability to rely on the data from these studies in support of regulatory submissions for our product candidates that are manufactured differently than those evaluated in these studies.

Table of Contents

Each of these clinical trials addresses a limited number of patients. We expect to use the results of these trials, if favorable, to help support the filing with the FDA of Juno-sponsored INDs to conduct more advanced clinical trials with the corresponding product candidates. We are conducting the TRANSCEND trial under a Juno-sponsored IND.

With respect to our CD22 product candidate, JCAR018, the NCI is conducting a clinical trial of the product candidate for the treatment of pediatric and young adult r/r ALL and r/r NHL. If the results of this trial are compelling, we expect to conduct a clinical trial of a related CD22-directed product candidate.

We also fund research and development under agreements with FHCRC, MSK, and SCRI, among other institutions. However, the research we are funding constitutes only a small portion of the overall research of each research institution. Other research being conducted by these institutions may at times receive higher priority than research on the programs we are funding. We typically have less control of the research, clinical trial protocols, and patient enrollment than we might with activity led by Juno employees.

The outside scientists who conduct the clinical testing of our current product candidates, and who conduct the research and development upon which our product candidate pipeline depends, are not our employees; rather they serve as either independent contractors or the primary investigators under research collaboration agreements that we have with their sponsoring academic or research institution. Such scientists and collaborators may have other commitments that would limit their availability to us. Although our scientific advisors generally agree not to do competing work, if an actual or potential conflict of interest between their work for us and their work for another entity arises, we may lose their services. These factors could adversely affect the timing of the clinical trials, the timing of receipt and reporting of clinical data, the timing of Juno-sponsored IND filings, and our ability to conduct future planned clinical trials. It is also possible that some of our valuable proprietary knowledge may become publicly known through these scientific advisors if they breach their confidentiality agreements with us, which would cause competitive harm to, and have a material adverse effect on, our business.

Our existing agreements with our collaboration partners may be subject to termination by the counterparty upon the occurrence of certain circumstances as described in more detail under the caption “Licenses and Third-Party Collaborations” in Part I—Item 1—“Business” of our Annual Report on Form 10-K for the year ended December 31, 2016. If any of our collaboration partners terminates their collaboration agreement, the research and development of the relevant product candidate would be suspended, and we may be unable to research, develop, and license future product candidates. 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. In addition, there is a natural transition period when a new third-party begins work. In addition, switching or adding third parties to conduct our clinical trials involves substantial cost and requires extensive management time and focus. As a result, delays may occur, which can materially impact our ability to meet our desired clinical development timelines.

We will be highly dependent on the NCI for early clinical testing of JCAR018.

In December 2014, we entered into an exclusive license agreement with Opus Bio, Inc. (“Opus Bio”) pursuant to which Opus Bio has granted us an exclusive, worldwide, sublicensable license under certain patent rights related to a CD22-directed CAR product candidate, JCAR018. In connection therewith, the NCI agreed to separate the activities that are exclusively related to CD22 under its agreement with Opus Bio and to enter into a separate agreement with us (the “Juno CRADA”), on the same terms as such agreement and incorporate such activities into its agreement with us.

The NCI has commenced a Phase I clinical trial of JCAR018 for the treatment of pediatric and young adult r/r ALL and r/r NHL. If the results of this trial are compelling, we expect to conduct a clinical trial of a related CD22-directed product candidate. However, we will have limited control over the nature or timing of the NCI’s clinical trial and limited visibility into their day-to-day activities, including manufacturing activities. For

Table of Contents

example, the clinical trial will constitute only a small portion of the NCI's overall research and the research of the principal investigators. Other research being conducted by the principal investigators may at times receive higher priority than research on JCAR018. We will also be dependent on the NCI to provide us with data, include batch records, to support the filing of our IND. These factors could adversely affect the timing of our IND filing. Additionally, the NCI manufactures drug product and we do not control the process or facility. While JCAR018 was not impacted, certain non-Juno product candidates' development was delayed in 2016 due to contamination issues at another NCI cell manufacturing facility.

The NCI may unilaterally terminate our rights under the Juno CRADA at any time for any reason or for no reason upon at least 60 days prior written notice. If the NCI unilaterally terminates the Juno CRADA, the research and development under the Juno CRADA would be suspended and we may lose certain of our data rights, which may impair our ability to obtain regulatory approval of JCAR018.

Our results of operations and financial position could be negatively impacted if our tax positions are challenged by tax authorities or if there are adverse changes in tax laws and regulations.

We are a U.S.-based multinational company subject to tax in certain U.S. and foreign tax jurisdictions. United States federal, state and local, as well as international tax laws and regulations are extremely complex and subject to varying interpretations. Although we believe that our tax estimates and tax positions are reasonable, there can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge. If we are unsuccessful in such a challenge, the relevant tax authorities may assess additional taxes, which could result in adjustments to, or impact the timing or amount of, taxable income, deductions or other tax allocations, which may adversely affect our results of operations and financial position. Presently, our German subsidiary is under examination by the German tax authorities for the years ended December 31, 2013 through December 31, 2015.

We could also be adversely affected in the future by changes in applicable tax laws, regulations, or administrative interpretations thereof. The Trump Administration and key members of Congress have made public statements indicating that U.S. corporate tax reform is a high priority, and Congress is expected to propose sweeping changes to the U.S. tax system, including changes to corporate tax rates and the taxation of income earned outside the United States (including the taxation of previously unrepatriated foreign earnings). A change to the U.S. tax system, a change to the tax system in a jurisdiction where we have significant operations, or a change in tax law in other jurisdictions where we do business, could have a material and adverse effect on our business and on the results of our operations.

If we fail to obtain additional financing, we may be unable to complete the development and commercialization of our product candidates.

Our operations have required substantial amounts of cash since inception. We expect to continue to spend substantial amounts to continue the clinical development of our product candidates, including our ongoing and planned clinical trials for our CD19 and BCMA product candidates. If approved, we will require significant additional amounts in order to launch and commercialize our product candidates.

As of June 30, 2017, we had $801.8 million in cash, cash equivalents, and marketable securities. We estimate that our net proceeds from this offering and the concurrent private placement will be approximately $262.2 million in the aggregate, after deducting the underwriting discounts and commissions, in the case of the offering, and estimated offering expenses payable by us. We expect to use the net proceeds from this offering and the concurrent private placement for working capital and general corporate purposes.

We believe that such proceeds, together with our existing cash, cash equivalents, and marketable securities will be sufficient to fund our operations for at least the next 12 months. However, changing circumstances or

Table of Contents

business opportunities, within or beyond our control, may lead us to use our capital faster than we currently anticipate. We may ultimately need to raise additional funds for the further development and commercialization of our product candidates or to pursue strategic transactions and other business opportunities that arise.

We cannot be certain that additional funding will be available on acceptable terms, or at all. We have no committed source of additional capital and if we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of our product candidates or other research and development initiatives. Our license and collaboration agreements may also be terminated if we are unable to meet the payment obligations under the agreements. We could be required to seek additional collaborators for our product candidates at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available or relinquish or license on unfavorable terms our rights to our product candidates in markets where we otherwise would seek to pursue development or commercialization ourselves.

If Celgene declines to exercise its option with respect to one or more product candidates covered by our Celgene Collaboration Agreement, or if a license agreement with Celgene for a program for which has exercised an option is terminated, we will need to secure funding to advance worldwide development of those programs on our own or secure relationships with collaborators that have the necessary capital and expertise. In addition, we may need additional funding to advance product candidates prior to Celgene's decisions regarding option exercise with respect to such product candidate if development of that program is not discontinued. Even after Celgene exercises an option for a program, we will still be responsible for a portion of worldwide development expenses for the associated product candidates and will be responsible for all commercialization expenses in the territories in which Juno leads development and commercialization activities. Additionally, either we or Celgene may opt not to fund a study led by the other under an active license agreement, and if Celgene opts not to fund a Juno-led study, then we would be responsible for the full cost of that study until such time, if ever, that Celgene determines to opt back in to the study at a premium to obtain the right to use data from that study in Celgene's territories. In addition, if we exercise our option to any of Celgene's in-licensed programs to co-develop and co-commercialize products, then we may need to secure additional funding to support our obligations to pay one-half of the acquisition costs of any such in-licensed program.

If we are unable to obtain sufficient financing when needed, it could significantly harm our business, prospects, financial condition and results of operations and cause the price of our common stock to decline.

Any future revenue from the license agreement with Penn and Novartis is highly dependent upon milestone and contingent royalty payments generated from the efforts of Penn and Novartis, over which we have no control, and we may not realize the intended benefits of this agreement.

On April 4, 2015, the parties to *Trustees of the University of Pennsylvania v. St. Jude Children's Research Hospital*, Civil Action No. 2:13-cv-01502-SD (E.D. Penn.), agreed to settle the case, which was dismissed on April 7, 2015. In connection with this settlement we entered into a sublicense agreement with the University of Pennsylvania ("Penn") and an affiliate of Novartis Pharmaceuticals Corporation ("Novartis") pursuant to which we granted Novartis a non-exclusive, royalty-bearing sublicense under certain patent rights, including U.S. Patent No. 8,399,645, to develop, make and commercialize licensed products and licensed services for all therapeutic, diagnostic, preventative and palliative uses. In exchange for this sublicense, Novartis is obligated to pay us mid-single digit royalties on the U.S. net sales of products and services related to the disputed contract and patent claims, a low double digit percentage of the royalties Novartis pays to Penn for global net sales of those products, and milestone payments upon the achievement of specified clinical, regulatory and commercialization milestones for licensed products. The sublicense agreement with Novartis and Penn is terminable by Novartis at will without notice to us and without our consent.

Our receipt of royalty and milestone payments from Novartis is subject to many risks and uncertainties. In particular, these payments are dependent upon Novartis' ability to make U.S. and global sales of its products and

Table of Contents

services, and its ability to achieve clinical, regulatory and commercialization milestones for the licensed products. We will have no control over the nature or timing of Novartis' efforts towards making these sales or achieving these milestones. Furthermore, in the course of developing and commercializing its products, Novartis and Penn will likely be subject to many risks and uncertainties similar to those faced by our company and our product candidates as described in this section, and may be subject to other risks specific to Novartis and Penn. Additionally, if Novartis or Penn breaches our sublicense agreement, we may determine to terminate the agreement, or may be required to do so by St. Jude pursuant to the terms of our license agreement with St. Jude. To the extent Novartis fails, for any of the reasons outlined above or any other reason, to remit royalty payments or milestone payments under our sublicense agreement, or fails to remit these payments in the amount anticipated, or to the extent that our sublicense agreement with Novartis and Penn is terminated, we may not realize the potential benefits of the sublicense agreement with Penn and Novartis.

We may never formalize our agreement in principle with Celgene to license Celgene a subset of the acquired AbVitro technology or the final terms of the agreement may not be as favorable to us as expected.

We and Celgene have agreed in principle to enter into an agreement to license Celgene a subset of the technology acquired from AbVitro Inc. ("AbVitro") and to grant Celgene options to certain related potential product rights emanating from the acquired technology. However, we may never come to agreement with Celgene on the formal terms of such an agreement, in which case we will not receive the financial benefits of such an agreement. Even if we do come to agreement with Celgene, it may not be on terms that are favorable to us as expected.

We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines or comply with regulatory requirements, we may not be able to obtain regulatory approval of or commercialize our product candidates.

We depend and expect to continue depending upon independent investigators and other third parties to conduct our clinical trials under agreements with universities, medical institutions, CROs, strategic partners, and others. At present, we contract directly with all of our trial sites, and therefore have to negotiate budgets and contracts with each trial site, which may result in delays to our development timelines and increased costs. If we transition to a CRO to manage the conduct of our clinical trials, we will also have to negotiate budgets and contracts with such CRO, which may similarly lead to delays and increased costs.

We rely and expect to continue relying heavily on third parties over the course of our clinical trials, and as a result have limited control over the clinical investigators and limited visibility into their day-to-day activities, including with respect to how they are providing and administering T cell therapy. Nevertheless, we are responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol and legal, regulatory, and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities. We and these third parties are required to comply with GCPs, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for product candidates in clinical development. Regulatory authorities enforce these GCPs through periodic inspections of trial sponsors, principal investigators, and trial sites. If we or any of these third parties fail to comply with applicable GCP regulations, some or all of the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional nonclinical or clinical trials or to enroll additional patients before approving our marketing applications. We cannot be certain that, upon inspection, such regulatory authorities will determine that any of our clinical trials complies with the GCP regulations. In addition, our clinical trials must be conducted with biologic product produced under cGMP regulations and will require a large number of test patients. Our failure or any failure by these third parties to comply with these regulations or to recruit a sufficient number of patients may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

Table of Contents

Any third parties conducting our clinical trials are not and will not be our employees and, except for remedies available to us under our agreements with such third parties, we cannot control whether or not they devote sufficient time and resources to our ongoing preclinical, clinical, and nonclinical programs. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical studies or other drug development activities, which could affect their performance on our behalf. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our clinical trials may be extended, delayed, or terminated and we may not be able to complete development of, obtain regulatory approval for or successfully commercialize our product candidates. As a result, our financial results and the commercial prospects for our product candidates would be harmed, our costs could increase, and our ability to generate revenue could be delayed. We have disclosed in this prospectus and various corporate presentations certain investigator-reported interim data from some of our trials, including interim data for which we have not yet independently reviewed the source data. We also sometimes rely on such investigator-reported interim data in making business decisions. Independent review of the data by us or by an independent review board could fail to confirm the investigator-reported interim data, which may lead to revisions in disclosed clinical trial results in the future. Any such revisions that reveal more negative data than previously disclosed investigator-reported interim data could have an adverse impact on our business prospects and the trading price of our common stock. Such revisions could also reduce investor confidence in investigator-reported interim data that we disclose in the future.

If any of our relationships with trial sites, or any CRO that we may use in the future, terminates, we may not be able to enter into arrangements with alternative trial sites or CROs or do so on commercially reasonable terms. Switching or adding additional trial sites or CROs involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new CRO begins work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines and such delays could have a material adverse impact on our business, financial condition, and prospects.

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.

Cancer therapies are sometimes characterized as first line, second line, or third line, and the FDA often approves new therapies initially only for third line use. When cancer is detected early enough, first line therapy is sometimes adequate to cure the cancer or prolong life without a cure. Whenever first line therapy, usually chemotherapy, hormone therapy, surgery, or a combination of these, proves unsuccessful, second line therapy may be administered. Second line therapies often consist of more chemotherapy, radiation, antibody drugs, tumor targeted small molecules, or a combination of these. Third line therapies can include bone marrow transplantation, antibody and small molecule targeted therapies, more invasive forms of surgery, and new technologies. We expect to initially seek approval of our product candidates as a third line therapy for patients who have failed other approved treatments.

Subsequently, for those products that prove to be sufficiently beneficial, if any, we would expect to seek approval as a second line therapy and potentially as a first line therapy, but there is no guarantee that our product candidates, even if approved, would be approved for second line or first line therapy. In addition, we may have to conduct additional clinical trials prior to gaining approval for second line or first line therapy.

Our projections of both the number of people who have the cancers we are targeting, as well as the subset of people with these cancers in a position to receive third line therapy and who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or market research and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these cancers. The number of patients may turn out to be lower than expected. Additionally, the potentially

Table of Contents

addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates. For instance, with our CD19 product candidates we expect to initially target a small patient population that suffers from certain types of aggressive NHL, r/r CLL, and r/r ALL. Even if we obtain significant market share for our product candidates, because the potential target populations are small, we may never achieve profitability without obtaining regulatory approval for additional indications, including use as a first or second line therapy.

Our market opportunities may also be limited by competitor treatments that may enter the market. See the risk factor below "—We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively."

We plan to seek orphan drug designation for some or all of our CD19 product candidates across various indications, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug designation, including market exclusivity, which may cause our revenue, if any, to be reduced.

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States when there is no reasonable expectation that the cost of developing and making available the drug or biologic in the United States will be recovered from sales in the United States for that drug or biologic. In order to obtain orphan drug designation, the request must be made before submitting a BLA. In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages, and user-fee waivers. After the FDA grants orphan drug designation, the generic identity of the drug and its potential orphan use are disclosed publicly by the FDA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval of that particular product for the disease for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a BLA, to market the same biologic (meaning, a product with the same principal molecular structural features) 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 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. As a result, even if one of our product candidates receives orphan exclusivity, the FDA can still approve other biologics that do not have the same principal molecular structural features for use in treating the same indication or disease or the same biologic for a different indication or disease during the exclusivity period. Furthermore, the FDA can waive orphan exclusivity if we are unable to manufacture sufficient supply of our product or if a subsequent applicant demonstrates clinical superiority over our product.

We plan to seek orphan drug designation for some or all of our CD19 product candidates in specific orphan indications in which there is a medically plausible basis for the use of these products. We have obtained orphan drug designation for JCAR017 for the treatment of each of diffuse large B-cell lymphoma ("DLBCL"), CLL, ALL, and follicular lymphoma. Even when we obtain orphan drug designation, exclusive marketing rights in the United States may be limited if we seek approval for an indication broader than the orphan designated indication and may be lost if the FDA later determines that the request for designation was materially defective or if we are unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition, or if a subsequent applicant demonstrates clinical superiority over our products, if approved. In addition, although we intend to seek orphan drug designation for other product candidates, we may never receive such designations.

Table of Contents

We plan to seek but may fail to obtain breakthrough therapy designation, and Celgene may seek but may fail to obtain access to PRIME, for some or all of our CD19 product candidates across various indications.

In 2012, the FDA established a breakthrough therapy designation which is intended to expedite the development and review of product candidates that treat serious or life-threatening diseases when "preliminary clinical evidence indicates that the drug 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 of a product candidate as a breakthrough therapy provides potential benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate and ensure collection of appropriate data needed to support approval; more frequent written correspondence from FDA about such things as the design of the proposed clinical trials and use of biomarkers; intensive guidance on an efficient drug development program, beginning as early as Phase I; organizational commitment involving senior managers; and eligibility for rolling review and priority review. Similarly, the EMA has established the PRIME scheme to expedite the development and review of product candidates that show a potential to address to a significant extent an unmet medical need, based on early clinical data.

We have obtained breakthrough therapy designation for JCAR017 for the treatment of r/r aggressive large B cell NHL, including DLBCL, not otherwise specified (de novo or transformed from indolent lymphoma), primary mediastinal B-cell lymphoma ("PMBCL"), or follicular lymphoma grade 3B. Celgene has obtained access to PRIME for JCAR017 for the treatment of r/r DLBCL. We intend to seek breakthrough therapy designation, and Celgene may seek access to PRIME, for some or all of our other product candidates that may qualify. There is no assurance that we will obtain breakthrough therapy designation, or that Celgene will obtain access to PRIME, for any of our other product candidates.

Breakthrough therapy designation and PRIME eligibility do not change the standards for product approval, and there is no assurance that such designation or eligibility will result in expedited review or approval. Additionally, breakthrough therapy designation and access to PRIME can each be revoked if the criteria for eligibility cease to be met as clinical data emerges.

We currently have very limited marketing and sales organization and have no experience as a company in marketing products. If we are unable to establish marketing and sales capabilities on our own or through our collaboration with Celgene or enter into agreements with third parties to market and sell our product candidates, we may not be able to generate product revenue.

Although we have begun to assemble a marketing and sales organization, the team is still very limited and we have no commercial product distribution capabilities and have no experience as a company in marketing products. We intend to develop an in-house marketing organization and sales force, which will require significant capital expenditures, management resources, and time. We will have to compete with other pharmaceutical and biotechnology companies to recruit, hire, train, and retain marketing and sales personnel.

Under our collaboration with Celgene, for Juno-developed programs that Celgene opts into, such as it has for our CD19 program, Celgene will lead development and commercialization activities outside of North America and China, but we will still be responsible for leading such activities in North America and China. If Celgene does not opt into a program for one of our product candidates that we move to commercialization, we will alone be responsible for commercialization activities worldwide, unless we find another collaborator to assist with the sales and marketing of our products.

If we are unable or decide not to establish internal sales, marketing and commercial distribution capabilities for any or all products we develop, we will likely pursue further collaborative arrangements regarding the sales and marketing of our products. However, there can be no assurance that we will be able to establish or maintain such collaborative arrangements, or if we are able to do so, that they will have effective sales forces. Any revenue we receive will depend upon the efforts of such third parties, which may not be successful. We may have

Table of Contents

little or no control over the marketing and sales efforts of such third parties, and our revenue from product sales may be lower than if we had commercialized our product candidates ourselves. We also face competition in our search for third parties to assist us with the sales and marketing efforts of our product candidates.

There can be no assurance that we will be able to develop in-house sales and commercial distribution capabilities or establish or maintain relationships with third-party collaborators to successfully commercialize any product in the United States or other territories, and as a result, we may not be able to generate product revenue.

A variety of risks associated with operating our business internationally could materially adversely affect our business.

As a result of the acquisition of Stage Cell Therapeutics GmbH, we acquired a German subsidiary with employees in Germany. We also plan to seek regulatory approval of our product candidates outside of the United States. Accordingly, we expect that we, Celgene, JW Therapeutics (Shanghai) Co., Ltd, and any other potential collaborators that have operations in foreign jurisdictions, will be subject to additional risks related to operating in foreign countries, including:

- differing regulatory requirements in foreign countries;
- unexpected changes in tariffs, trade barriers, taxes, price and exchange controls, or price and currency fluctuations;
- weak economic conditions, labor unrest, political instability, war, or terror;
- compliance with applicable tax, employment, immigration, data privacy, and labor laws for employees living or traveling abroad;
- difficulties staffing operations and managing foreign employees;
- potential liability under the Foreign Corrupt Practices Act of 1977 or comparable foreign laws;
- challenges enforcing our contractual and intellectual property rights, especially in those foreign countries that do not respect and protect intellectual property rights to the same extent as the United States; and
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad.

These and other risks associated with our planned international operations may materially adversely affect our ability to attain or maintain profitable operations.

We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.

The biopharmaceutical industry, and the rapidly evolving market for developing genetically engineered T cells in particular, is characterized by intense competition and rapid innovation. Our competitors may be able to develop other compounds or drugs that are able to achieve similar or better results. Our potential competitors include major multinational pharmaceutical companies, established biotechnology companies, specialty pharmaceutical companies, universities, and other research institutions. Many of our competitors have substantially greater financial, technical and other resources, such as larger research and development staff and experienced marketing and manufacturing organizations as well as established sales forces. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large, established companies. Mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated in our competitors. Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for

Table of Contents

investment in these industries. Our competitors, either alone or with collaborative partners, may succeed in developing, acquiring or licensing on an exclusive basis drug or biologic products that are more effective, safer, more easily commercialized, or less costly than our product candidates or may develop proprietary technologies or secure patent protection that we may need for the development of our technologies and products.

Specifically, genetically engineering T cells faces significant competition in both the CAR and TCR technology space from multiple companies and their collaborators, such as Novartis/Penn, Kite Pharma, Inc. ("Kite") / Amgen / NCI, Cellectis / Pfizer / Servier, Johnson & Johnson / Transposagen Biopharmaceuticals, bluebird bio, Nanjing Legend Biotech Co., Bellicum, Celyad, Cell Design Labs, NantKwest, Intrexon / Ziopharm / MD Anderson Cancer Center, Unum Therapeutics, Adaptimmune / GlaxoSmithKline, ImmunoCellular Therapeutics, Adicet Bio, and Autolus. We also face competition from non-cell based treatments offered by companies such as Amgen, Pfizer, Abbvie, AstraZeneca, Bristol-Myers, Incyte, Merck, Roche, Regeneron, Corvus, Macrogenics, Mustang Bio, Inc. and Johnson & Johnson. In particular, in August 2017 Novartis received approval from the FDA for Kymriah (tisagenlecleucel), formerly known as CTL019, for the treatment of pediatric and young adult r/r ALL. Additionally, Kite announced in March 2017 that it had completed the submission of its BLA for axicabtagene ciloleucel (KTE-C19) for treatment of patients with r/r NHL and projected a commercial launch for the product in 2017. In August 2017, Kite and Gilead Sciences, Inc. ("Gilead") announced that Gilead had agreed to acquire Kite, with an anticipated closing of the acquisition in the fourth quarter of 2017.

Even if we obtain regulatory approval of our product candidates, we may not be the first to market and that may affect the price or demand for our product candidates. Additionally, the availability and price of our competitors' products could limit the demand and the price we are able to charge for our product candidates. We may not be able to implement our business plan if the acceptance of our product candidates is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our product candidates, or if physicians switch to other new drug or biologic products or choose to reserve our product candidates for use in limited circumstances. Additionally, a competitor could obtain orphan product exclusivity from the FDA with respect to such competitor's product. If such competitor product is determined to be the same product as one of our product candidates, that may prevent us from obtaining approval from the FDA for such product candidate for the same indication for seven years, except in limited circumstances.

For additional information regarding our competition, see the section captioned "Competition" in Part I—Item 1—"Business" located in our Annual Report on Form 10-K for the year ended December 31, 2016.

We are highly dependent on our key personnel, and if we are not successful in attracting, motivating, training, and retaining highly qualified personnel, we may not be able to successfully implement our business strategy.

Our ability to compete in the highly competitive biotechnology and pharmaceutical industries and to scale our operations depends upon our ability to attract, motivate, train, and retain highly qualified managerial, scientific, medical, commercial, manufacturing, and quality control/assurance personnel. We are highly dependent on our management, particularly our chief executive officer, Hans Bishop, and our scientific, medical, commercial, manufacturing, and quality control/assurance personnel. The loss of the services of any of our executive officers, other key employees, and other scientific and medical advisors, and our inability to find suitable replacements or to recruit a sufficient number of qualified personnel to scale our operations, could result in delays in product development or commercialization activities and harm our business.

We conduct most of our operations at our facilities in Seattle and Bothell, Washington, in a region that is headquarters to many other biopharmaceutical companies and many academic and research institutions. We also have operations in Massachusetts, California, and Germany and currently have employees in all three geographies. Competition for skilled personnel is intense in all of these geographies and the turnover rate can be high, which may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all. We

Table of Contents

expect that we will need to recruit talent from outside of the regions in which we currently operate, and doing so may be costly and difficult. Further expansion into additional states or countries could also increase our regulatory and legal risks.

To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided restricted stock and stock option grants that vest over time. The value to employees of these equity grants that vest over time may be significantly affected by movements in our stock price that are beyond our control, and may at any time be insufficient to counteract more lucrative offers from other companies. Although we have employment agreements with our key employees, these employment agreements provide for at-will employment, which means that any of our employees could leave our employment at any time, with or without notice. We do not maintain "key man" insurance policies on the lives of all of these individuals or the lives of any of our other employees.

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

As of June 30, 2017, we had 554 employees worldwide, most of whom are full time. As our development and commercialization plans and strategies develop, we must add a significant number of additional research and development, managerial, operational, sales, marketing, financial, and other personnel. Future growth will impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining, and motivating additional employees;
- administering office locations in multiple geographies;
- managing our internal development efforts effectively, including the clinical and FDA review process for our product candidates, while complying with our contractual obligations to contractors and other third parties; and
- improving our operational, financial and management controls, reporting systems, and procedures.

Our future financial performance and our ability to commercialize our product candidates will depend, in part, on our ability to effectively manage any future growth, and our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to devote a substantial amount of time to managing these growth activities.

We currently rely, and for the foreseeable future will continue to rely, in substantial part on certain independent organizations, advisors and consultants to provide certain services. There can be no assurance that the services of these independent organizations, advisors and consultants will continue to be available to us on a timely basis when needed, or that we can find qualified replacements. In addition, if we are unable to effectively manage our outsourced activities or if the quality or accuracy of the services provided by consultants is compromised for any reason, our clinical trials may be extended, delayed, or terminated, and we may not be able to obtain regulatory approval of our product candidates or otherwise advance our business. There can be no assurance that we will be able to manage our existing consultants or find other competent outside contractors and consultants on economically reasonable terms, if at all.

If we are not able to effectively expand our organization by hiring new employees and expanding our groups of consultants and contractors, we may not be able to successfully implement the tasks necessary to further develop and commercialize our product candidates and, accordingly, may not achieve our research, development, and commercialization goals.

Table of Contents

We have engaged in and may in the future engage in acquisitions or strategic partnerships, which could divert management's attention, increase our capital requirements, dilute our stockholders, be difficult to integrate, cause us to incur debt or assume contingent liabilities, and subject us to other risks.

We have made or entered into several acquisitions or strategic partnerships, such as our acquisitions of AbVitro and RedoxTherapies, Inc. in 2016, and we may continue to evaluate various acquisitions and strategic partnerships, including licensing or acquiring complementary products, intellectual property rights, technologies, or businesses.

Any acquisition or strategic partnership may entail numerous risks, including:

- increased operating expenses and cash requirements;
- the assumption of additional indebtedness or contingent liabilities, including any earn-out milestones;
- the issuance of our equity securities;
- assimilation of operations, intellectual property and products of an acquired company, including difficulties associated with integrating new personnel;
- the diversion of our management's attention from our existing product programs and initiatives in pursuing such a strategic merger or acquisition;
- retention of key employees, the loss of key personnel, and uncertainties in our ability to maintain key business relationships;
- expense or diversion of efforts related to the development of acquired technology under any diligence obligation required of us with respect to earn out milestones for an acquisition transaction, where we may not undertake such expense or efforts absent such diligence obligations;
- risk that the other party or parties to an acquisition transaction may claim that we have not satisfied any earn out diligence obligation and seek damages or other legal or equitable relief;
- risks and uncertainties associated with the other party to such a transaction, including the prospects of that party and their existing products or product candidates and regulatory approvals; and
- our inability to generate revenue from acquired technology and/or products sufficient to meet our objectives in undertaking the acquisition or even to offset the associated acquisition and maintenance costs.

In addition, if we undertake additional acquisitions, we may issue dilutive securities, assume or incur debt obligations, incur large one-time expenses and acquire intangible assets that could result in significant future amortization expense. We also cannot be certain that, following a strategic transaction or license, we will achieve the revenue or specific net income that justifies such transaction. Moreover, we may not be able to locate suitable acquisition opportunities and this inability could impair our ability to grow or obtain access to technology or products that may be important to the development of our business.

Our success payment obligations to FHCRC and MSK may result in dilution to our stockholders, may be a drain on our cash resources, or may cause us to incur debt obligations to satisfy the payment obligations.

We have agreed to make success payments to each of FHCRC and MSK pursuant to the terms of our agreements with each of those entities. These success payments will be based on increases in the estimated fair value of our common stock, payable in cash or publicly-traded equity at our discretion. The term of these obligations may last up to 11 years. Success payments will be owed (if applicable) after measurement of the value of our common stock in connection with the following valuation measurement dates during the term of the success payment agreement: (1) December 19, 2014, which was the date our common stock first became publicly traded; (2) the date on which we sell, lease, transfer or exclusively license all or substantially all of our assets to

Table of Contents

another company; (3) the date on which we merge or consolidate with or into another entity (other than a merger in which our pre-merger stockholders own a majority of the shares of the surviving entity); (4) any date on which ARCH Venture Fund VII, L.P. or C.L. Alaska L.P. transfers a majority of its shares of company capital stock held by it on such date to a third party; (5) every second anniversary of any event described in the preceding clauses (1), (2), (3) or (4), but, in the case of FHCRC, only upon a request by FHCRC made within 20 calendar days after receiving written notice from us of such event; and (6) the last day of the 11 year period. The amount of a success payment is determined based on whether the value of our common stock meets or exceeds certain specified threshold values ascending, in the case of FHCRC, from $20.00 per share to $160.00 per share and, in the case of MSK, from $40.00 per share to $120.00 per share, in each case subject to adjustment for any stock dividend, stock split, combination of shares, or other similar events. Each threshold is associated with a success payment, ascending, in the case of FHCRC, from $10.0 million at $20.00 per share to $375.0 million at $160.00 per share and, in the case of MSK, from $10.0 million at $40.00 per share to $150.0 million at $120.00 per share, payable if such threshold is reached. The maximum aggregate amount of success payments to FHCRC is $375.0 million and to MSK is $150.0 million, in each case subject to cost offsets related to our cash payments for collaboration activities. In December 2015, success payments to FHCRC were triggered in the aggregate amount of $75.0 million, less indirect cost offsets of $3.3 million, and a success payment to MSK was triggered in the amount of $10.0 million, less indirect cost offsets of $1.0 million. We elected to make the payment to FHCRC and MSK in shares of our common stock, and thereby issued 1,601,085 and 240,381 shares of our common stock to FHCRC in December 2015 and to MSK in March 2016, respectively. In April 2016, we agreed to repurchase the shares issued to MSK at a price per share equal to $41.90. See the section captioned “Licenses and Third-Party Collaborations” in Part I—Item 1—“Business” in our Annual Report on Form 10-K for the year ended December 31, 2016 for further discussion of these success payments.

The next anticipated valuation measurement date at which success payments may be triggered is December 19, 2018. Success payments will only be triggered on that date to the extent the average closing price of a share of our common stock over the consecutive 90 calendar day period preceding December 19, 2018 meets or exceeds $60.00, subject to adjustment for any stock dividend, stock split, combination of shares, and other similar events. In order to satisfy our obligations to make these success payments, if and when they are triggered, we may issue equity securities that may cause dilution to our stockholders, or we may use our existing cash or incur debt obligations to satisfy the success payment obligation in cash, which may adversely affect our financial position.

The success payment obligations to FHCRC and MSK may cause GAAP operating results to fluctuate significantly from quarter to quarter, which may reduce the usefulness of our GAAP financial statements.

Our success payment obligations to FHCRC and MSK are recorded as a liability on our balance sheet. Under generally accepted accounting principles in the United States (“GAAP”), we are required to estimate the fair value of this liability as of each quarter end and changes in estimated fair value are amortized using the accelerated attribution method over the remaining term of the corresponding collaboration agreement. Factors that may lead to increases or decreases in the estimated fair value of this liability include, among others, changes in the value of the common stock, change in volatility, changes in the applicable term of the success payments, changes in the risk free rate, and changes in the estimated indirect costs that are creditable against FHCRC and MSK success payments. A small change in the inputs and related assumptions may have a relatively large change in the estimated valuation and associated liability and resulting expense or gain. For instance, see Note 4 to our condensed consolidated financial statements included in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017 for a sensitivity analysis showing the impact that a hypothetical change in the value of our common stock would have had on our results for the three months ended June 30, 2017. As a result, our operating results and financial condition as reported by GAAP may fluctuate significantly from quarter to quarter and from year to year and may reduce the usefulness of our GAAP financial statements.

Table of Contents

Raising additional capital may cause dilution to our existing stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates.

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships, and alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise additional funds through strategic partnerships and alliances and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or product candidates, or grant licenses on terms unfavorable to us.

If we, our CROs or our CMOs use hazardous and biological materials in a manner that causes injury or violates applicable law, we may be liable for damages.

Our research and development activities involve the controlled use of potentially hazardous substances, including chemical and biological materials, by us or third parties, such as CROs and CMOs. We and such third parties are subject to federal, state, and local laws and regulations in the United States governing the use, manufacture, storage, handling, and disposal of medical and hazardous materials. Although we believe that our and such third parties' procedures for using, handling, storing, and disposing of these materials comply with legally prescribed standards, we cannot completely eliminate the risk of contamination or injury resulting from medical or hazardous materials. As a result of any such contamination or injury, we may incur liability or local, city, state, or federal authorities may curtail the use of these materials and interrupt our business operations. In the event of an accident, we could be held liable for damages or penalized with fines, and the liability could exceed our resources. We do not have any insurance for liabilities arising from medical or hazardous materials. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development and production efforts, which could harm our business, prospects, financial condition, or results of operations.

Our internal computer systems, or those used by our third-party research institution collaborators, CROs or other contractors or consultants, may fail or suffer security breaches.

Despite the implementation of security measures, our internal computer systems and those of our future CROs and other contractors and consultants are vulnerable to damage from computer viruses and unauthorized access. Although to our knowledge we have not experienced any such material system failure or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, 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 our third-party research institution collaborators for research and development of our product candidates and 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. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information or patient information, we could incur liability and the further development and commercialization of our product candidates could be delayed.

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

Our operations, and those of our third-party research institution collaborators, CROs, CMOs, suppliers, and other contractors and consultants, could be subject to earthquakes, power shortages, telecommunications failures,

Table of Contents

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 predominantly self-insured. Our headquarters and our Juno-operated manufacturing facility are located less than 25 miles apart, and therefore could both be similarly affected by the same event. In addition, we rely on our third-party research institution collaborators for conducting research and development of our product candidates, and they may be affected by government shutdowns or withdrawn funding. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. We rely on third-party manufacturers in part to produce and process our product candidates or to supply us with certain reagents or specialized equipment or materials used our manufacturing process. Our ability to obtain clinical or commercial 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. Damage or extended periods of interruption to our corporate, development, research, or manufacturing 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. Although we maintain property damage and business interruption insurance coverage, our insurance might not cover all losses under such circumstances and our business may be seriously harmed by such delays and interruption.

If product liability lawsuits are 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 as a result of the clinical testing of our product candidates and will face an even greater risk if we commercialize any products. For example, we may be sued if our product candidates cause or are perceived to cause injury or are found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our products;
- injury to our reputation;
- withdrawal of clinical trial participants and inability to continue clinical trials;
- initiation of investigations by regulators;
- costs to defend the related litigation;
- a diversion of management's time and our resources;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue;
- exhaustion of any available insurance and our capital resources;
- the inability to commercialize any product candidate; and
- a decline in our share price.

Our inability to obtain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of products we develop, alone or with collaborators. Although we currently carry $10.0 million of clinical trial insurance, the amount of such insurance coverage may not be adequate, we may be unable to maintain such insurance, or we may not be able to obtain

Table of Contents

additional or replacement insurance at a reasonable cost, if at all. Our insurance policies may also have various exclusions, and we may be subject to a product liability claim for which we have no coverage. We may have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts. Even if our agreements with any future corporate collaborators entitle us to indemnification against losses, such indemnification may not be available or adequate should any claim arise.

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

As of December 31, 2016, we had U.S. federal net operating loss carryforwards of approximately $249.4 million, which will begin to expire in 2033. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an "ownership change" (generally defined as a greater than 50-percentage-point cumulative change (by value) in the equity ownership of certain stockholders over a rolling three-year period), the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change taxable income or taxes may be limited. As a result of our transactions that have occurred since our incorporation in August 2013, including our initial public offering, we have experienced and, in connection with this offering, may experience, such "ownership changes," but we have determined that our use of pre-change net operating loss carryforwards and other pre-change tax attributes is not subject to a material annual limitation. However, we may also experience ownership changes in the future as a result of subsequent shifts in our stock ownership, some of which changes are outside our control. As a result, our ability to use our pre-change net operating loss carryforwards and other pre-change tax attributes to offset post-change taxable income or taxes may be subject to further limitation.

Risks Related to Government Regulation

The FDA regulatory approval process is lengthy, time-consuming, and inherently unpredictable, and we may experience significant delays in the clinical development and regulatory approval, if any, of our product candidates.

The research, testing, manufacturing, labeling, approval, selling, import, export, marketing, and distribution of drug products, including biologics, are subject to extensive regulation by the FDA and other regulatory authorities in the United States. We are not permitted to market any biological drug product in the United States until we receive approval of a BLA from the FDA. We have not previously submitted a BLA to the FDA, or similar approval filings to comparable foreign authorities. A BLA must include extensive preclinical and clinical data and supporting information to establish that the product candidate is safe, pure, and potent for each desired indication. The BLA must also include significant information regarding the chemistry, manufacturing, and controls for the product, and the manufacturing facilities must complete a successful pre-license inspection. We expect the novel nature of our product candidates to create further challenges in obtaining regulatory approval. For example, the FDA has limited experience with commercial development of genetically modified T cell therapies for cancer. The FDA may also require a panel of experts, referred to as an Advisory Committee, to deliberate on the adequacy of the safety and efficacy data to support licensure. The opinion of the Advisory Committee, although not binding, may have a significant impact on our ability to obtain licensure of the product candidates based on the completed clinical trials. Accordingly, the regulatory approval pathway for our product candidates may be uncertain, complex, expensive, and lengthy, and approval may not be obtained. In addition, clinical trials can be delayed or terminated for a variety of reasons, including delays or failures related to:

- obtaining regulatory approval to begin a trial, if applicable;
- the availability of financial resources to begin and complete the trials;
- reaching agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining approval at each clinical trial site by an independent IRB;

Table of Contents

- recruiting suitable patients to participate in a trial in a timely manner;
- having patients complete a trial or return for post-treatment follow-up;
- clinical trial sites deviating from trial protocol, not complying with GCPs, or dropping out of a trial;
- addressing any patient safety concerns that arise during the course of a trial;
- addressing any conflicts with new or existing laws or regulations;
- adding new clinical trial sites; or
- manufacturing qualified materials under cGMPs for use in clinical trials.

Patient enrollment is a significant factor in the timing of clinical trials and is affected by many factors. See the risk factor above "—If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected" for additional information on risks related to patient enrollment.

Further, a clinical trial may be suspended or terminated by us, the IRBs for the institutions in which such trials are being conducted, or the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate adequate benefit from using a product candidate, changes in governmental regulations or administrative actions, or lack of adequate funding to continue the clinical trial. Some studies, including our TRANSCEND trial for JCAR017, include oversight by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board, which provides a recommendation for whether or not a study should move forward at designated check points based on access to certain data from the study and may recommend the suspension of the clinical trial if it determines that there is an unacceptable safety risk for subjects or on other grounds, such as no demonstration of efficacy, insufficient pace of enrollment, or lack of adherence to protocol. The recommendations of the data safety monitoring board are then considered by us, the trial site IRBs, and the FDA or other regulatory agencies, and may impact our or their decisions regarding the continuation, suspension, or termination of a clinical trial.

If we experience termination of, or delays in the completion of, any clinical trial of our product candidates, the commercial prospects for our product candidates will be harmed, and our ability to generate product revenue will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product development and approval process and jeopardize our ability to commence product sales and generate revenue.

Our third-party research institution collaborators may also experience similar difficulties in completing ongoing clinical trials and conducting future clinical trials of product candidates. Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our product candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction, but a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. For example, even if the FDA grants marketing approval of a product candidate, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion of

Table of Contents

the product candidate in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from those in the United States, including additional preclinical studies or clinical trials as clinical studies conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a product candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our products is also subject to approval.

Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. If we fail to comply with the regulatory requirements in international markets and/or to receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed.

Even if we receive regulatory approval of our product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our product candidates.

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

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

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 to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase IV clinical trials and surveillance to monitor the safety and efficacy of the product candidate. The FDA may also require a REMS program as a condition of approval of our product candidates, which could entail requirements for long-term patient follow-up, a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, we will have to comply with requirements including submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs and GCPs for any clinical trials that we conduct post-approval.

The FDA may impose consent decrees or 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 our product candidates, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or 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 our products, withdrawal of the product from the market, or voluntary or mandatory product recalls;

Table of Contents

- fines, warning letters, or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of license approvals;
- product seizure or detention, or refusal to permit the import or export of our product candidates; and
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising, and promotion of products that are placed on the market. Drugs may be promoted only for the approved indications 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, and a company that is found to have improperly promoted off-label uses may be subject to significant liability. The policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the Trump administration may impact our business and industry. Namely, the Trump administration has taken several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, FDA's ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. Notably, on January 30, 2017, President Trump issued an Executive Order directing all executive agencies, including the FDA, that, for each notice of proposed rulemaking or final regulation to be issued in fiscal year 2017, the agency shall identify at least two existing regulations to be repealed, unless prohibited by law. These requirements are referred to as the "two-for-one" provisions. This Executive Order includes a budget neutrality provision that requires the total incremental cost of all new regulations in the 2017 fiscal year, including repealed regulations, to be no greater than zero, except in limited circumstances. For fiscal years 2018 and beyond, the Executive Order requires agencies to identify regulations to offset any incremental cost of a new regulation. In interim guidance issued by the Office of Information and Regulatory Affairs within OMB on February 2, 2017, the administration indicates that the "two-for-one" provisions may apply not only to agency regulations, but also to significant agency guidance documents. On February 24, 2017, President Trump issued another Executive Order obligating agencies to designate regulatory reform officers to oversee implementation of regulatory reform initiatives, including the two-for-one provisions described in the January 30, 2017 Executive Order. On September 8, 2017, the FDA published notices in the Federal Register soliciting broad public comment to identify regulations that could be modified, repealed, or replaced in furtherance of these Executive Orders. It is difficult to predict how these orders will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose restrictions on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. In addition, if we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

In addition, if we were able to obtain accelerated approval of any of our CD19 product candidates or any of our other product candidates, the FDA would require us to conduct a confirmatory study to verify the predicted clinical benefit and additional safety studies. The results from the confirmatory study may not support the clinical benefit, which would result in the approval being withdrawn. While operating under accelerated approval, we will be subject to certain restrictions that we would not be subject to upon receiving regular approval.

Our product candidates are regulated as biologic products, which may face competition sooner than anticipated.

The Affordable Care Act, signed into law in 2010, includes a subtitle called the Biologics Price Competition and Innovation Act of 2009 ("BPCIA"), which created an abbreviated approval pathway for biological products

Table of Contents

that are biosimilar to or interchangeable with an FDA-licensed reference biological product. 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. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement BPCIA may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of our product candidates approved as a biological product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider our product candidates to be reference products for competing products, potentially creating the opportunity for competition sooner than anticipated. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

Even if we obtain regulatory approval of our product candidates, the products may not gain market acceptance among physicians, patients, hospitals, cancer treatment centers, and others in the medical community.

The use of engineered T cells as a potential cancer treatment is a recent development and may not become broadly accepted by physicians, patients, hospitals, cancer treatment centers, and others in the medical community. We expect physicians in the large bone marrow transplant centers to be particularly influential, and we may not be able to convince them to use our product candidates for many reasons. For example, certain of the product candidates that we will be developing target a cell surface marker that may be present on cancer cells as well as non-cancerous cells. It is possible that our product candidates may kill these non-cancerous cells, which may result in unacceptable side effects, including death. Additional factors will influence whether our product candidates are accepted in the market, including:

- the clinical indications for which our product candidates are approved;
- physicians, hospitals, cancer treatment centers, and patients considering our product candidates, or CAR or TCR product candidates generally, as a safe and effective treatment;
- the potential and perceived advantages of our product candidates over alternative treatments;
- the prevalence and severity of any side effects;
- product labeling or product insert requirements of the FDA or other regulatory authorities;
- limitations or warnings contained in the labeling approved by the FDA;
- the timing of market introduction of our product candidates as well as competitive products;
- the cost of treatment in relation to alternative treatments;
- the amount of upfront costs or training required for physicians to administer our product candidates;
- the availability of adequate coverage, reimbursement, and pricing by third-party payors and government authorities;
- the willingness of patients to pay out-of-pocket in the absence of coverage and reimbursement by third-party payors and government authorities;

Table of Contents

- relative convenience and ease of administration, including as compared to alternative treatments and competitive therapies; and
- the effectiveness of our sales and marketing efforts and distribution support.

In addition, although we are not utilizing embryonic stem cells or replication competent vectors, adverse publicity due to the ethical and social controversies surrounding the therapeutic use of such technologies, and reported side effects from any clinical trials using these technologies or the failure of such trials to demonstrate that these therapies are safe and effective may limit market acceptance our product candidates. If our product candidates are approved but fail to achieve market acceptance among physicians, patients, hospitals, cancer treatment centers or others in the medical community, we will not be able to generate significant revenue.

Even if our products achieve market acceptance, we may not be able to maintain that market acceptance over time if new products or technologies are introduced that are more favorably received than our products, are more cost effective or render our products obsolete.

Coverage and reimbursement may be limited or unavailable in certain market segments for our product candidates, which could make it difficult for us to sell our product candidates profitably.

Successful sales of our product candidates, if approved, depend on the availability of adequate coverage and reimbursement from third-party payors. In addition, because our product candidates represent new approaches to the treatment of cancer, we cannot accurately estimate the potential revenue from our product candidates.

Patients who are provided medical treatment for their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, commercial payors, and integrated delivery networks are critical to new product acceptance.

Government authorities and third-party payors, such as private health insurers and health maintenance organizations, and integrated delivery networks decide which drugs and treatments they will cover and the amount of reimbursement. Coverage and reimbursement by a third-party payor may depend upon a number of factors, including the third-party payor's determination that use of a product is:

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

In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors. As a result, obtaining coverage and reimbursement approval of a product from a government or other third-party payor is a time-consuming and costly process that could require us to provide to each payor supporting scientific, clinical and cost-effectiveness data for the use of our products on a payor-by-payor basis, with no assurance that coverage and adequate reimbursement will be obtained. Even if we obtain coverage for a given product, the resulting reimbursement payment rates might not be adequate for us to achieve or sustain profitability or may require co-payments that patients find unacceptably high. Additionally, third-party payors may not cover, or provide adequate reimbursement for, long-term follow-up evaluations required following the use of our genetically modified products. Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates. Because our product candidates have a higher cost of goods than conventional therapies, and may require long-term follow up evaluations, the risk that coverage and reimbursement rates may be inadequate for us to achieve profitability may be greater.

Table of Contents

We intend to seek approval to market our product candidates in both the United States and in selected foreign jurisdictions. If we obtain approval in one or more foreign jurisdictions for our product candidates, we will be subject to rules and regulations in those jurisdictions. In some foreign countries, particularly those in the EU, the pricing of biologics is subject to governmental control and other market regulations which could put pressure on the pricing and usage of our product candidates. In these countries, pricing negotiations with governmental authorities can take considerable time after obtaining marketing approval of a product candidate. In addition, market acceptance and sales of our product candidates will depend significantly on the availability of adequate coverage and reimbursement from third-party payors for our product candidates and may be affected by existing and future health care reform measures.

Healthcare legislative reform measures, or public focus on product pricing, may have a material adverse effect on our business and results of operations.

Third-party payors, whether domestic or foreign, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory changes to the health care system that could impact our ability to sell our products profitably. In particular, in 2010, the Affordable Care Act was enacted, which, among other things, subjected biologic products to potential competition by lower-cost biosimilars, addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, increased the minimum Medicaid rebates owed by most manufacturers under the Medicaid Drug Rebate Program, extended the Medicaid Drug Rebate program to utilization of prescriptions of individuals enrolled in Medicaid managed care organizations, subjected manufacturers to new annual fees and taxes for certain branded prescription drugs, and provided incentives to programs that increase the federal government's comparative effectiveness research. Since its enactment, there have been judicial and Congressional challenges to certain aspects of the Affordable Care Act, and we expect there will be additional challenges and amendments to the Affordable Care Act in the future, particularly in light of the new presidential administration and Congress. In addition, Congress will likely continue to seek to modify, repeal, or otherwise invalidate all of, or certain provisions of, the Affordable Care Act. At this time, the full effect that the Affordable Care Act and any subsequent legislation or executive action would have on our business remains unclear.

In addition, other legislative changes have been proposed and adopted in the United States since the Affordable Care Act was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect in April 2013, and, due to subsequent legislative amendments, will remain in effect through 2025 unless additional Congressional action is taken. In January 2013, the American Taxpayer Relief Act of 2012, was signed into law, which, among other things, further reduced Medicare payments to several providers, including hospitals and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. More recently, the 21st Century Cures Act changed the reimbursement methodology for infusion drugs and biologics furnished through durable medical equipment in an attempt to remedy over- and underpayment of certain drugs.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. For instance, there have recently been public hearings in Congress concerning pharmaceutical product pricing and proposed bills 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 pharmaceutical products. Additionally, at the state-level, individual states in the U.S. have increasingly been active in passing legislation and implementing regulations designed to control

Table of Contents

pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. We cannot predict the initiatives that may be adopted in the future. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare and/or impose price controls may adversely affect:

- the demand for our product candidates, if we obtain regulatory approval;
- our ability to set a price that we believe is fair for our products;
- our ability to generate revenue and achieve or maintain profitability;
- the level of taxes that we are required to pay; and
- the availability of capital.

Any denial in coverage or reduction in reimbursement from Medicare or other government programs may result in a similar denial or reduction in payments from private payors, which may adversely affect our future profitability.

There has also been, and may in the future be, public attention on product pricing, and that may result in political, interest group, or media criticism of companies whose pricing or potential pricing is perceived by the public as high. If we were to become subject to such criticism, it could harm our reputation, create adverse publicity, and impact our relationships with our suppliers, collaborators, medical providers, and patients, each which could adversely affect our business and results of operations.

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

We are exposed to the risk of fraud, misconduct or other illegal activity by our employees, independent contractors, consultants, commercial partners and vendors. Misconduct by these parties could include intentional, reckless and negligent conduct that fails to: comply with the laws of the FDA and other similar foreign regulatory bodies; provide true, complete and accurate information to the FDA and other similar foreign regulatory bodies; comply with manufacturing standards we have established; comply with healthcare fraud and abuse laws in the United States and similar foreign fraudulent misconduct laws; or report financial information or data accurately or to disclose unauthorized activities to us. If we obtain FDA approval of any of our product candidates and begin commercializing those products in the United States, our potential exposure under such laws will increase significantly, and our costs associated with compliance with such laws are also likely to increase. These laws may impact, among other things, our current activities with principal investigators and research patients, as well as proposed and future sales, marketing and education programs. In particular, the promotion, sales and marketing of healthcare items and services, as well as certain business arrangements in the healthcare industry, are subject to extensive laws designed to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices.

These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, structuring and commission(s), certain customer incentive programs and other business arrangements generally. Activities subject to these laws also involve the improper use or misrepresentation of information obtained in the course of clinical trials, creating fraudulent data in our preclinical studies or clinical trials or illegal misappropriation of drug product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a

Table of Contents

failure to comply with these laws or regulations. Additionally, we are subject to the risk that a person or government agency could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant fines or other sanctions.

We may be subject, directly or indirectly, to federal and state healthcare fraud and abuse laws, false claims laws, physician payment transparency laws and health information privacy and security laws. If we are unable to comply, or have not fully complied, with such laws, we could face substantial penalties.

If we obtain FDA approval for any of our product candidates and begin commercializing those products in the United States, our operations may be directly, or indirectly through our customers, subject to various federal and state fraud and abuse laws, including, without limitation, the federal Anti-Kickback Statute, the federal False Claims Act, and physician sunshine laws and regulations. These laws may impact, among other things, our current activities with clinical study investigators and research subjects, as well as proposed sales, marketing, and education programs. In addition, we may be subject to patient privacy regulation by both the federal government and the states in which we conduct our business. The laws that may affect our ability to operate include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying any remuneration (including any kickback, bribe, or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for, either the referral of an individual, or the purchase, lease, order or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid programs. 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, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act;
- federal civil and criminal false claims laws and civil monetary penalty laws, including the False Claims Act, which impose criminal and civil penalties, including through civil “qui tam” or “whistleblower” actions, against individuals or entities from knowingly presenting, or causing to be presented, claims for payment or approval from Medicare, Medicaid, or other third-party payors that are false or fraudulent or knowingly making a false statement to improperly avoid, decrease or conceal an obligation to pay money to the federal government. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of these statutes or specific intent to violate them in order to have committed a violation;
- the federal Health Insurance Portability and Accountability Act of 1996, which created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and their respective implementing regulations, which impose requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates that perform services for them that involve the use, or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information without appropriate authorization;
- the federal Physician Payment Sunshine Act, created under the Affordable Care Act, and its implementing regulations, which require manufacturers of drugs, devices, biologicals and medical

Table of Contents

supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program to report annually to the U.S. Department of Health and Human Services under the Open Payments Program, 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;

- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers; and
- analogous state and foreign laws and regulations, such as (1) state and foreign anti-kickback, false claims, consumer protection and unfair competition laws which may apply to pharmaceutical business practices, including but not limited to, research, distribution, sales and marketing arrangements as well as submitting claims involving healthcare items or services reimbursed by any third-party payer, including commercial insurers, (2) state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government that otherwise restricts payments that may be made to healthcare providers and other potential referral sources, (3) state laws that require drug manufacturers to file reports with states regarding pricing and marketing information, such as the tracking and reporting of gifts, compensations and other remuneration and items of value provided to healthcare professionals and entities, and (4) state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge under one or more of such laws.

Efforts to ensure that our business arrangements will comply with applicable healthcare laws may involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and 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 civil, criminal and administrative penalties, damages, disgorgement, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. In addition, the approval and commercialization of any of our product candidates outside the United States will also likely subject us to foreign equivalents of the healthcare laws mentioned above, among other foreign laws.

Risks Related to Intellectual Property

We depend on intellectual property licensed from third parties and termination of any of these licenses could result in the loss of significant rights, which would harm our business.

We are dependent on patents, know-how, and proprietary technology, both our own and licensed from others. Any termination of these licenses could result in the loss of significant rights and could harm our ability to commercialize our product candidates. See the section captioned "Licenses and Third-Party Collaborations" in Part I—Item 1—"Business" of our Annual Report on Form 10-K for the year ended December 31, 2016 for additional information regarding our license agreements.

Disputes may also arise between us and our licensors regarding intellectual property subject to a license agreement, including those relating to:

- the scope of rights granted under the license agreement and other interpretation-related issues;

Table of Contents

- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the license agreement;
- our right to sublicense patent and other rights to third parties under collaborative development relationships;
- whether we are complying with our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product candidates;
- the amount of royalty payments owed under license agreements; and
- the allocation of ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and by us and our partners.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates. We are generally also subject to all of the same risks with respect to protection of intellectual property that we license as we are for intellectual property that we own, which are described below. If we or our licensors fail to adequately protect this intellectual property, our ability to commercialize our products could suffer. For an example of the risks relating to such disputes, see the risk factor below "—We are involved in litigation that may be expensive and time consuming, and if resolved adversely, could harm our business, financial condition, or results of operations."

We depend, in part, on our licensors to file, prosecute, maintain, defend, and enforce patents and patent applications that are material to our business.

Patents relating to our product candidates are controlled by certain of our licensors. Each of our licensors generally has rights to file, prosecute, maintain, and defend the patents we have licensed from such licensor. We generally have the first right to enforce our patent rights, although our ability to settle such claims often requires the consent of the licensor. If our licensors or any future licensees having rights to file, prosecute, maintain, and defend our patent rights fail to conduct these activities for patents or patent applications covering any of our product candidates, our ability to develop and commercialize those product candidates may be adversely affected and we may not be able to prevent competitors from making, using, or selling competing products. We cannot be certain that such activities by our licensors have been or will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents or other intellectual property rights. Pursuant to the terms of the license agreements with some of our licensors, the licensors may have the right to control enforcement of our licensed patents or defense of any claims asserting the invalidity of these patents and, even if we are permitted to pursue such enforcement or defense, we cannot ensure the cooperation of our licensors. We cannot be certain that our licensors will allocate sufficient resources or prioritize their or our enforcement of such patents or defense of such claims to protect our interests in the licensed patents. Even if we are not a party to these legal actions, an adverse outcome could harm our business because it might prevent us from continuing to license intellectual property that we may need to operate our business. In addition, even when we have the right to control patent prosecution of licensed patents and patent applications, enforcement of licensed patents, or defense of claims asserting the invalidity of those patents, we may still be adversely affected or prejudiced by actions or inactions of our licensors and their counsel that took place prior to or after our assuming control.

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

We own or license from third parties certain intellectual property rights necessary to develop our product candidates. The growth of our business will likely depend in part on our ability to acquire or in-license additional proprietary rights. For example, our programs may involve additional product candidates that may require the use of additional proprietary rights held by third parties. Our product candidates may also require specific formulations to work effectively and efficiently. These formulations may be covered by intellectual property

Table of Contents

rights held by others. We may be unable to acquire or in-license any relevant third-party intellectual property rights that we identify as necessary or important to our business operations. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all, which would harm our business. We may need to cease use of the compositions or methods covered by such third-party intellectual property rights, and may need to seek to develop alternative approaches that do not infringe on such intellectual property rights which may entail additional costs and development delays, even if we were able to develop such alternatives, which may not be feasible. Even if we are able to obtain a license under such intellectual property rights, any such license may be non-exclusive, which may allow our competitors' access to the same technologies licensed to us.

Additionally, we sometimes collaborate with academic institutions to accelerate our preclinical research or development under written agreements with these institutions. Typically, these institutions provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the collaboration. Regardless of such option, we may be unable to negotiate a license within the specified timeframe or under terms that are acceptable to us. If we are unable to do so, the institution may offer the intellectual property rights to other parties, potentially blocking our ability to pursue our program. If we are unable to successfully obtain rights to required third-party intellectual property or to maintain the existing intellectual property rights we have, we may have to abandon development of such program and our business and financial condition could suffer.

The licensing and acquisition of third-party intellectual property rights is a competitive practice, and companies that may be more established, or have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our product candidates. More established companies may have a competitive advantage over us due to their larger size and cash resources or greater clinical development and commercialization capabilities. There can be no assurance that we will be able to successfully complete such negotiations and ultimately acquire the rights to the intellectual property surrounding the additional product candidates that we may seek to acquire.

We are dependent on intellectual property sublicensed to us by Opus Bio from the NIH for development of JCAR018. Failure to meet our own obligations to Opus Bio and the NIH may result in the loss of our rights to such intellectual property, which could harm our business.

Under our license agreement with Opus Bio, we are obligated to make certain pass-through payments to the NIH as well as to meet certain development benchmarks within certain time periods. We may be unable to make these payments or meet these benchmarks or may breach our other obligations under this license agreement, which could lead to the termination of the license agreement.

In addition, the NIH has the right to require us to grant mandatory sublicenses to the intellectual property licensed from the NIH under certain specified circumstances, including if it is necessary to meet health and safety needs that we are not reasonably satisfying or if it is necessary to meet requirements for public use specified by federal regulations. Any required sublicense of these licenses could result in the loss of significant rights and could harm our ability to commercialize licensed products.

We could be unsuccessful in obtaining or maintaining adequate patent protection for one or more of our products or product candidates.

We anticipate that we will file additional patent applications both in the United States and in other countries, as appropriate. However, we cannot predict:

- if and when any patents will issue;
- the degree and range of protection any issued patents will afford us against competitors, including whether third parties will find ways to invalidate or otherwise circumvent our patents;
- whether others will apply for or obtain patents claiming aspects similar to those covered by our patents and patent applications; or

Table of Contents

- whether we will need to initiate litigation or administrative proceedings to defend our patent rights, which may be costly whether we win or lose.

Composition of matter patents for biological and pharmaceutical products such as CAR or TCR product candidates are generally considered to be the strongest form of intellectual property protection for those types of products, as such patents provide protection without regard to any method of use. We cannot be certain, however, that the claims in our pending patent applications covering the composition of matter of our product candidates will be considered patentable by the United States Patent and Trademark Office ("USPTO"), or by patent offices in foreign countries, or that the claims in any of our issued patents will be considered valid and enforceable by courts in the United States or foreign countries. Method of use patents protect the use of a product for the specified method. This type of patent does not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. Moreover, even if competitors do not actively promote their product for our targeted indications, physicians may prescribe these products "off-label" for those uses that are covered by our method of use patents. Although off-label prescriptions may infringe or contribute to the infringement of method of use patents, the practice is common and such infringement is difficult to prevent or prosecute.

The strength of patents in the biotechnology and pharmaceutical field can be uncertain, and evaluating the scope of such patents involves complex legal and scientific analyses. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our product candidates or uses thereof in the United States or in other foreign countries. Even if the patents do successfully issue, third parties may challenge the validity, enforceability, or scope thereof, which may result in such patents being narrowed, invalidated, or held unenforceable. For example, in 2015, Kite filed a petition with the USPTO for inter partes review of U.S. Patent No. 7,446,190, a patent that we have exclusively licensed from MSK. Although the USPTO upheld all the claims of this patent in December 2016, Kite has appealed this decision. If Kite is successful in its appeal, one or more of the patent's claims could be narrowed or invalidated. Furthermore, even if they are unchallenged, our patents and patent applications may not adequately protect our intellectual property or prevent others from designing their products to avoid being covered by our claims. If the breadth or strength of protection provided by the patent applications we hold with respect to our product candidates is threatened, this could dissuade companies from collaborating with us to develop, and could threaten our ability to commercialize, our product candidates. Further, if we encounter delays in our clinical trials, the period of time during which we could market our product candidates under patent protection would be reduced. Because patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we were the first to file any patent application related to our product candidates. Furthermore, for U.S. applications in which all claims are entitled to a priority date before March 16, 2013, an interference proceeding can be provoked by a third party or instituted by the USPTO to determine who was the first to invent any of the subject matter covered by the patent claims of our applications. For U.S. applications containing a claim not entitled to priority before March 16, 2013, there is a greater level of uncertainty in the patent law in view of the passage of the America Invents Act, which brought into effect significant changes to the U.S. patent laws, including new procedures for challenging pending patent applications and issued patents.

Confidentiality agreements with employees and third parties may not prevent unauthorized disclosure of trade secrets and other proprietary information.

In addition to the protection afforded by patents, we seek to rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce, and any other elements of our product discovery and development processes that involve proprietary know-how, information, or technology that is not covered by patents. Trade secrets, however, may be difficult to protect. We seek to protect our proprietary processes, in part, by entering into confidentiality agreements with our employees, consultants, outside scientific advisors, contractors, and collaborators. Although we use reasonable efforts to protect our trade secrets, our employees, consultants, outside scientific advisors, contractors, and collaborators might intentionally or inadvertently

Table of Contents

disclose our trade secret information to competitors. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Furthermore, the laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. If we are unable to prevent unauthorized material disclosure of our intellectual property to third parties, or misappropriation of our intellectual property by third parties, we will not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, operating results, and financial condition.

Third-party claims of intellectual property infringement against us or our collaborators may prevent or delay our product discovery and development efforts.

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

Numerous U.S. and foreign issued patents and pending patent applications owned by third parties exist in the fields in which we are developing our product candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may give rise to claims of infringement of the patent rights of others.

Third parties may assert that we infringe their patents, or that we are otherwise employing their proprietary technology without authorization, and may sue us. For instance, Novartis has asserted in writing its belief that we infringe the following patents controlled by Novartis: U.S. Patent Nos. 7,408,053, 7,205,101, 7,527,925, and 7,442,525. There may be third-party patents of which we are currently unaware with claims to compositions, formulations, methods of manufacture, or methods of use or treatment that cover our product candidates. Because patent applications can take many years to issue, there may be currently pending patent applications that may later result in issued patents that our product candidates may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies or the manufacture, use, or sale of our product candidates infringes upon these patents. If any such third-party patents were held by a court of competent jurisdiction to cover our technologies or product candidates, the holders of any such patents may be able to block our ability to commercialize the applicable product candidate unless we obtain a license under the applicable patents, or until such patents expire or are finally determined to be held invalid or unenforceable. Such a license may not be available on commercially reasonable terms or at all. If we are unable to obtain a necessary license to a third-party patent on commercially reasonable terms, our ability to commercialize our product candidates may be impaired or delayed, which could in turn significantly harm our business.

Third parties asserting their patent rights against us may seek and obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize our product candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of management and other employee resources from our business, and may impact our reputation. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties, or redesign our infringing products, which may be impossible or require substantial time and monetary expenditure. In that event, we would be unable to further develop and commercialize our product candidates, which could harm our business significantly.

Table of Contents

We have limited foreign intellectual property rights and may not be able to protect our intellectual property rights throughout the world.

We have limited intellectual property rights outside the United States, and, in particular, some of our patents directed to CAR constructs do not extend outside of the United States. Filing, prosecuting, maintaining 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 have a different scope and strength than do those in the United States. In addition, the laws of some foreign countries, such as China, Brazil, Russia, and India, 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 rights are not as strong as those in the United States. These products may compete with our products and our patents or other intellectual property rights may not be effective or adequate to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, such as China, Brazil, Russia, and India, do not favor the enforcement of patents, trade secrets and other intellectual property, particularly those relating to biopharmaceutical products, which could make it difficult in those jurisdictions for us to stop the infringement or misappropriation of our patents or other intellectual property rights, or the marketing of competing products in violation of our proprietary rights. Proceedings to enforce our patent and other intellectual property rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Furthermore such proceedings could put our patents at risk of being invalidated, held unenforceable, or interpreted narrowly, could put our patent applications at risk of not issuing, and could provoke third parties to assert claims of infringement or misappropriation 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.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time-consuming, and unsuccessful.

Competitors may infringe our patents or the patents of our licensors. To cease such infringement or unauthorized use, we may be required to file patent infringement claims, which can be expensive and time-consuming. For instance, in September 2017, we filed a complaint against Kite in the federal district court for the Central District of California for infringement and declaratory judgment of infringement of U.S. Patent No. 7,446,190. In addition, in an infringement proceeding or a declaratory judgment action, a court may decide that one or more of our patents is not valid or is unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceeding could put one or more of our patents at risk of being invalidated, held unenforceable, or interpreted narrowly and could put our patent applications at risk of not issuing. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business.

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

Table of Contents

interests and, even if we are 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. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock.

Issued patents covering our product candidates could be found invalid or unenforceable if challenged in court or before the USPTO or comparable foreign authority.

If we or one of our licensing partners initiate legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that the patent covering our product candidate is invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, inter partes review, post-grant review, and equivalent proceedings in foreign jurisdictions, such as opposition or derivation proceedings. Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover and protect our product candidates. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity of our patents, for example, we cannot be certain that there is no invalidating prior art of which we, our patent counsel, 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 our product candidates. Such a loss of patent protection could have a material adverse impact on our business.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products.

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involves, both technological and legal complexity, and is therefore costly, time-consuming, and inherently uncertain. In addition, the United States has recently enacted and is currently implementing wide-ranging patent reform legislation. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents once obtained. Depending on decisions by Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. For example, in *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, the U.S. Supreme Court held that certain claims to naturally-occurring substances are not patentable. Although we do not believe that any of the patents owned or licensed by us will be found invalid based on this decision, we cannot predict how future decisions by Congress, the federal courts or the USPTO may impact the value of our patents.

We may be subject to claims that our employees, consultants, or independent contractors have wrongfully used or disclosed confidential information of third parties.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies. We may be subject to claims that we or our employees, consultants, or independent contractors have inadvertently or otherwise used or disclosed confidential information of these third parties or our employees' former employers.

Table of Contents

Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees.

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

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment, and other similar provisions during the patent application process. Although an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, 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. Noncompliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees, and failure to properly legalize and submit formal documents. In any such event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

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

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its first effective filing date. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired for a product, we may be open to competition from biosimilar or generic medications. Our patents issued as of December 31, 2016 will expire on dates ranging from 2019 to 2033, subject to any patent extensions that may be available for such patents. If patents are issued on our patent applications pending as of December 31, 2016, the resulting patents are projected to expire on dates ranging from 2021 to 2037. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. If we do not have sufficient patent life to protect our products, our business and results of operations will be adversely affected.

We may face competition from biosimilars, which may have a material adverse impact on the future commercial prospects of our product candidates.

Even if we are successful in achieving regulatory approval to commercialize a product candidate faster than our competitors, we may face competition from biosimilars. In the United States, the BPCIA created an abbreviated approval pathway for biological products that are demonstrated to be "highly similar," or biosimilar, to or "interchangeable" with an FDA-approved biological product. This new pathway could allow competitors to reference data from innovative biological products 12 years after the time of approval of the innovative biological product. This data exclusivity does not prevent another company from developing a product that is highly similar to the innovative product, generating its own data, and seeking approval. Data exclusivity only assures that another company cannot rely upon the data within the innovator's application to support the biosimilar product's approval. In his proposed budget for fiscal year 2014, President Obama proposed to cut this 12-year period of exclusivity down to seven years. He also proposed to prohibit additional periods of exclusivity due to minor changes in product formulations, a practice often referred to as "evergreening." It is possible that Congress may take these or other measures to reduce or eliminate periods of exclusivity. The BPCIA is complex and continues to be interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning is subject to uncertainty. Although it is uncertain when any such processes may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our product candidates.

Table of Contents

In Europe, the European Commission has granted marketing authorizations for several biosimilars pursuant to a set of general and product class-specific guidelines for biosimilar approvals issued over the past few years. In Europe, a competitor may reference data supporting approval of an innovative biological product, but will not be able to get it on the market until 10 years after the time of approval of the innovative product. This 10-year marketing exclusivity period will be extended to 11 years if, during the first eight of those 10 years, the marketing authorization holder obtains an approval for one or more new therapeutic indications that bring significant clinical benefits compared with existing therapies. In addition, companies may be developing biosimilars in other countries that could compete with our products.

If competitors are able to obtain marketing approval for biosimilars referencing our products, our products may become subject to competition from such biosimilars, with the attendant competitive pressure and consequences.

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 of our patents or ownership of our intellectual property, we may in the future be subject to claims that former employees, collaborators, or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. For example, 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. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Risks Related to Our Common Stock and this Offering

We expect that our stock price will fluctuate significantly.

The trading price of our common stock may be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. In addition to the factors discussed in this "Risk Factors" section and elsewhere in this prospectus, these factors include:

- adverse results, clinical holds, or delays in the clinical trials of our product candidates or any future clinical trials we may conduct, or changes in the development status of our product candidates;
- any disruption in our ability to manufacture drug product that impacts our clinical trial enrollment, regulatory approval timelines, or commercial supply;
- any delay in our regulatory filings for our product candidates and any adverse development or perceived adverse development with respect to the applicable regulatory authority's review of such filings, including without limitation the FDA's issuance of a "refusal to file" letter or a request for additional information;
- regulatory or legal developments in the United States and other countries, especially changes in laws or regulations applicable to our products, including clinical trial requirements for approvals;
- our inability to obtain or delays in obtaining adequate product supply for any approved product or inability to do so at acceptable prices;
- any failure to commercialize our product candidates or if the size and growth of the markets we intend to target fail to meet expectations;
- additions or departures of key scientific or management personnel;

Table of Contents

- unanticipated serious safety concerns related to cancer immunology or the use of our product candidates;
- introductions or announcements of new products offered by us or significant acquisitions, strategic partnerships, joint ventures or capital commitments by us, our collaborators or our competitors and the timing of such introductions or announcements;
- announcements relating to future collaborations or our existing collaboration with Celgene, including decisions regarding the exercise by Celgene or us of any of our or their options thereunder, or any exercise or non-exercise by Celgene of a right to purchase shares of our common stock;
- our ability to effectively manage our growth;
- our ability to successfully treat additional types of cancers or at different stages;
- changes in the structure of healthcare payment systems;
- our failure to meet the estimates and projections of the investment community or that we may otherwise provide to the public;
- publication of research reports about us or our industry, or immunotherapy in particular, or positive or negative recommendations or withdrawal of research coverage by securities analysts;
- market conditions in the pharmaceutical and biotechnology sectors or the economy generally;
- our ability or inability to raise additional capital through the issuance of equity or debt or collaboration arrangements and the terms on which we raise it;
- trading volume of our common stock;
- disputes or other developments relating to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- rumors and market speculation involving us or other companies in our industry, regardless of the accuracy of such rumors or speculation;
- clinical trial, regulatory, or commercial setbacks to other companies in our field, which may impact perceptions of value or risk to our business; and
- significant lawsuits, including patent or stockholder litigation.

The stock market in general, and market prices for the securities of biopharmaceutical companies like ours in particular, have from time to time experienced volatility that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock, regardless of our operating performance. In several recent situations 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. The defense and disposition of any such lawsuits could be costly and divert the time and attention of our management and harm our operating results, regardless of the merits of such a claim.

We are involved in litigation that may be expensive and time consuming, and if resolved adversely, could harm our business, financial condition, or results of operations.

As described in Part II—Item 1—"Legal Proceedings" of our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, a consolidated securities class action is pending against Juno and two of our executive officers. Defending against this lawsuit will be costly and may significantly divert management's time and attention from our business. There can be no assurance that a favorable outcome will be obtained. A negative outcome, whether by final judgment or an unfavorable settlement, could result in payments of significant monetary damages or fines, which could adversely affect our business, financial condition, or results of operations.

Table of Contents

In addition, on September 8, 2017, a stockholder filed a purported derivative action on behalf of Juno against two of our executive officers and certain members of our board of directors in the federal district court for the Western District of Washington. The complaint alleges claims for breaches of fiduciary duties arising out of the same issues that are the subject of the securities class action, as well as claims under the federal securities laws related to our compensation for non-employee directors. We have not yet responded to the complaint. Dealing with the case may divert management's and the board of directors' time and attention from our business and cause us to incur additional legal costs.

On August 22, 2017, City of Hope filed a complaint and commenced a lawsuit against Juno, *City of Hope v. Juno Therapeutics, Inc.*, Case No. 2:17-cv-06201-RGK, in the federal district court for the Central District of California. The complaint alleges that Juno has materially breached its exclusive license agreement with City of Hope by failing to seek consent for an alleged sublicense of Juno's rights under such license to Celgene, and by failing to pay fees owed in connection with that alleged sublicense. The City of Hope license requires Juno to pay City of Hope 15% of sublicense revenues, defined as "all consideration received by [Juno] in return for the grant of rights to manufacture, use, offer for sell, or sell a Licensed Product, other than consideration in the form of: (i) running royalties calculated as a function of Net Sales and payment, (ii) payment or reimbursement to [Juno] of costs actually incurred by [Juno] in conducting clinical trials of a Licensed Product, and (iii) reimbursement for actual Patent Expenses due pursuant to this Agreement." In its request for relief, City of Hope seeks compensatory damages in an amount "no less than 15% of all consideration received by Juno pursuant to the [Celgene] Collaboration Agreement, [Celgene] Share Purchase Agreement, and Celgene Option Exercise [i.e., the CD19 License Agreement]." The complaint also seeks a declaratory judgment that Juno materially breached the City of Hope license. On August 31, 2017, Juno filed an answer and counterclaim in the lawsuit, generally denying City of Hope's allegations of breach of contract, asserting several affirmative defenses, and asserting several counterclaims, including claims of breach of contract, breach of the covenant of good faith and fair dealing, and seeking among other things a declaratory judgment that City of Hope has no grounds to terminate the City of Hope license. See the section captioned "Licenses and Third-Party Collaborations" in Part I—Item 1—"Business" in our Annual Report on Form 10-K for the year ended December 31, 2016 for further discussion of both the City of Hope license and our agreements with Celgene. Contesting this lawsuit will be costly and may significantly divert management's time and attention from our business. There can be no assurance that a favorable outcome will be obtained. A negative outcome, whether by final judgment or an unfavorable settlement, could result in payments of significant monetary damages or fines and could potentially lead to the termination of the City of Hope license, and could adversely affect our business, financial condition, or results of operations.

An active trading market for our common stock may not be sustained.

Although our common stock is listed on The NASDAQ Global Select Market, the market for our shares has demonstrated varying levels of trading activity. Furthermore, an active trading market may not be sustained in the future. The lack of an active market may impair investors' ability to sell their shares at the time they wish to sell them or at a price that they consider reasonable, may reduce the market value of their shares and may impair our ability to raise capital. Pursuant to an additional stock purchase agreement with Celgene dated as of the date of this prospectus, we will sell to Celgene 659,415 shares of our common stock (or up to 758,327 shares if the underwriters exercise in full their option to purchase additional shares) in a private placement exempt from the registration requirements of the Securities Act of 1933, as amended (the "Securities Act"), at a price of $41.00 per share. The consummation of the concurrent private placement is contingent on the closing of this offering. The number of shares we will sell to Celgene constitutes approximately 9.76% of the aggregate number of the shares sold in this offering and the private placement, which is equal to the percentage of our common stock Celgene beneficially owned following its last exercise of its top-up purchase rights pursuant to the Celgene Share Purchase Agreement. Celgene will be restricted from selling shares it purchases by restrictions under applicable securities laws and the voting and standstill agreement it has entered into with Juno.

Table of Contents

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

The trading market for our common stock is influenced by the research and reports that industry or securities analysts publish about us or our business. If one or more of the analysts who cover us issues an adverse opinion about our company, our stock price would likely decline. If one or more of these analysts ceases research coverage of us or fails to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Future sales of our common stock in the public market could cause our stock price to fall.

Our stock price could decline as a result of sales of a large number of shares of our common stock or the perception that these sales could occur. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

As of June 30, 2017, we had 106,301,349 shares of common stock outstanding, including 1,404,384 shares of restricted stock that remained subject to vesting requirements. All 10,350,833 shares acquired by Celgene from us to date under the share purchase agreement we entered into with Celgene in June 2015 (the "Celgene Share Purchase Agreement") are subject to a market standoff agreement through March 23, 2018, which is 364 days from the date of Celgene's most recent acquisition of stock from us. Any subsequent acquisitions of shares of our common stock by Celgene, including under the concurrent private placement, will commence another 364 day market standoff period for all Juno shares held by Celgene, subject to certain exceptions.

We have also registered the offer and sale of all shares of common stock that we may issue under our equity compensation plans, including upon the exercise of stock options. These shares can be freely sold in the public market upon issuance.

In connection with this offering, subject to certain exceptions, we and all of our directors and executive officers have agreed not to offer, sell or agree to sell, directly or indirectly, any shares of common stock without the permission of Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC, for a period of 90 days after the date of this prospectus. When the applicable lock-up periods expire, subject to the applicable securities laws, we and our directors and executive officers subject to such lock-up agreements will be able to sell shares in the public market.

As of June 30, 2017, the holders of as many as 27.9 million shares, or 26.3% of our common stock outstanding, have rights, subject to some conditions, under the investor rights agreement with such holders to require us to file registration statements covering the sale of their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. Additionally, any shares of common stock issued in the future upon payment of success payments with FHCRC and MSK or upon achievement of the remaining milestone payable in equity under the license with Opus Bio will also be entitled to registration rights under the investor rights agreement. Once we register the offer and sale of shares for the holders of registration rights, they can be freely sold in the public market. In connection with the Celgene Share Purchase Agreement, we have also entered into a registration rights agreement with Celgene, pursuant to which upon the written request of Celgene at certain times and subject to the satisfaction of certain conditions, we have agreed to prepare and file with the SEC a registration statement on Form S-3 for purposes of registering the resale of the shares specified in Celgene's written request or, if we are not at such time eligible for the use of Form S-3, use commercially reasonable efforts to prepare and file a registration statement on a Form S-1 or alternative form that permits the resale of the shares.

In addition, in the future, we may issue additional shares of common stock or other equity or debt securities convertible into common stock in connection with a financing, acquisition, litigation settlement, employee

Table of Contents

arrangements or otherwise, including up to 30% of shares of our outstanding common stock to Celgene. Any such issuance could result in substantial dilution to our existing stockholders and could cause our stock price to decline.

Additionally, sales of our common stock by our executive officers or directors, even when done during an open trading window under Juno's policies with respect to insider sales or done under a trading plan adopted in accordance with the guidelines set forth by Rule 10b5-1, may adversely impact the trading price of our common stock. Although we do not expect that the relatively small volume of such sales will itself significantly impact the trading price of our common stock, the market could react negatively to the announcement of such sales, which could in turn affect the trading price of our common stock.

Our principal stockholders and management own a significant percentage of our stock and are able to exercise significant influence over matters subject to stockholder approval.

Our executive officers, directors and our 10% or greater stockholders as of June 30, 2017, together with their respective affiliates, beneficially owned approximately 40.9% of our capital stock as of June 30, 2017, and upon completion of this offering and the concurrent private placement, that group will beneficially own 22.97% of our capital stock, excluding shares underlying outstanding options and restricted stock units. Pursuant to an additional stock purchase agreement with Celgene dated as of the date of this prospectus, we will sell to Celgene 659,415 shares (or up to 758,327 of our shares of common stock if the underwriters exercise in full their option to purchase additional shares) of our common stock in a private placement exempt from the registration requirements of the Securities Act, at a price of $41.00 per share. The consummation of the concurrent private placement is contingent on the closing of this offering. The number of shares we will sell to Celgene constitutes approximately 9.76% of the aggregate number of the shares sold in this offering and the private placement, which is equal to the percentage of our common stock Celgene beneficially owned following its last exercise of its top up purchase rights pursuant to the Celgene Share Purchase Agreement. Accordingly, such persons and entities, if they acted together, would be able to determine the composition of the board of directors, retain the voting power to approve many matters requiring stockholder approval, including mergers and other business combinations, and continue to have significant influence over our operations. In addition, other than in connection with a change of control, in any vote or action by written consent of our stockholders, including, without limitation, with respect to the election of directors, Celgene has agreed to vote or execute a written consent with respect to all of our voting securities held by Celgene in accordance with the recommendation of our board of directors, limiting the ability of Celgene to vote contrary to our board of directors that you otherwise may believe is in your best interest as our stockholder. This concentration of ownership amongst our significant holders, including Celgene, could have the effect of delaying or preventing a change in our control or otherwise discouraging a potential acquirer from attempting to obtain control of us that you may believe are in your best interests as one of our stockholders. This in turn could have a material adverse effect on our stock price and may prevent attempts by our stockholders to replace or remove the board of directors or management.

Celgene has acquired 10,350,833 shares of our common stock to date under the Celgene Share Purchase Agreement and will acquire additional shares of common stock in connection with the concurrent private placement. Subject to certain conditions, Celgene may purchase additional shares annually to obtain and maintain a 9.76% ownership percentage through June 29, 2020. Furthermore, between June 29, 2019 and June 29, 2025 and between June 29, 2024 and the expiration of the Celgene Collaboration Agreement, subject to certain conditions, Celgene has the option to acquire and maintain an ownership of up to 19.99% and up to 30%, respectively, of our then outstanding shares of common stock. We have also entered into a voting and standstill agreement with Celgene, pursuant to which we have agreed to give Celgene certain board designation rights until at least June 29, 2020, and thereafter for as long as Celgene and its affiliates beneficially own at least 7.5% of the voting power of our outstanding shares. As a result of the concentration of ownership, Celgene could have the ability to delay or prevent a change in our control or otherwise discourage a potential acquirer from attempting to obtain control of us that you may believe are in your best interests as our stockholder.

Table of Contents

Anti-takeover provisions in our charter documents and under Delaware or Washington law could make an acquisition of us difficult, limit attempts by our stockholders to replace or remove our current management and adversely affect our stock price.

Provisions of our certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our stock. Among other things, the certificate of incorporation and bylaws:

- permit the board of directors to issue up to 5,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that the authorized number of directors may be changed only by resolution of the board of directors;
- provide that all vacancies, including newly-created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide the board of directors into three classes;
- provide that a director may only be removed from the board of directors by the stockholders for cause;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and may not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and meet specific requirements as to the form and content of a stockholder's notice;
- prevent cumulative voting rights (therefore allowing the holders of a plurality of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- require that, to the fullest extent permitted by law, a stockholder reimburse us for all fees, costs and expenses incurred by us in connection with a proceeding initiated by such stockholder in which such stockholder does not obtain a judgment on the merits that substantially achieves the full remedy sought;
- provide that special meetings of our stockholders may be called only by the chairman of the board, our chief executive officer (or president, in the absence of a chief executive officer) or by the board of directors; and
- provide that stockholders will be permitted to amend the bylaws only upon receiving at least two-thirds of the total votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class.

Furthermore, pursuant to the voting and standstill agreement with Celgene, until the later of the fifth anniversary of the date of such agreement and the expiration or earlier termination of our Celgene Collaboration Agreement, it will be bound by certain "standstill" provisions which generally will prevent it from purchasing outstanding shares of our common stock, making a tender offer or encouraging or supporting a third party tender offer, nominating a director whose nomination has not been approved by our board of directors, soliciting proxies in opposition to the recommendation of our board of directors or assisting a third party in taking such actions, entering into discussions with a third party as to such actions, or requesting or proposing in writing to our board of directors or any member thereof that we amend or waive any of these limitations. As a result, the ability of Celgene to act in contrary to our board of directors is severely limited and any attempts by Celgene to acquire us

Table of Contents

or encourage a third party to acquire us are prohibited by this voting and standstill agreement. In addition, subject to certain exceptions—including a vote in connection with a change in control of our company—Celgene has agreed to vote or execute a written consent with respect to all of our voting securities held by Celgene in accordance with the recommendation of our board of directors, limiting the ability of Celgene to contrary to our board of directors that you otherwise may believe is in your best interest as our stockholder.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any "interested" stockholder for a period of three years following the date on which the stockholder became an "interested" stockholder. Likewise, because our principal executive offices are located in Washington, the anti-takeover provisions of the Washington Business Corporation Act may apply to us under certain circumstances now or in the future. These provisions prohibit a "target corporation" from engaging in any of a broad range of business combinations with any stockholder constituting an "acquiring person" for a period of five years following the date on which the stockholder became an "acquiring person."

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

Complying with the laws and regulations affecting public companies has increased and will increase our costs and the demands on management and could harm our operating results.

As a public company, we will continue to incur significant legal, accounting and other expenses that we did not incur as a private company, including costs associated with public company reporting requirements. We also anticipate that we will incur costs associated with relatively recently adopted corporate governance requirements, including requirements of the SEC and NASDAQ. We expect these rules and regulations to increase our legal and financial compliance costs and to make some activities more time-consuming and costly. We also expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as executive officers. We are currently evaluating and monitoring developments with respect to these rules, and we cannot predict or estimate the amount of additional costs we may incur or the timing of such costs.

For example, the Sarbanes-Oxley Act requires, among other things, that we assess the effectiveness of our internal control over financial reporting annually and the effectiveness of our disclosure controls and procedures quarterly. Section 404 of the Sarbanes-Oxley Act ("Section 404") requires us to perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on, and our

Table of Contents

independent registered public accounting firm potentially to attest to, the effectiveness of our internal control over financial reporting. Our compliance with applicable provisions of Section 404, including the requirement that our independent registered public accounting firm undertake an assessment of our internal control over financial reporting, will require that we incur substantial accounting expense and expend significant management time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements. Moreover, if we are not able to comply with the requirements of Section 404 applicable to us in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources. Furthermore, investor perceptions of our company may suffer if deficiencies are found, and this could cause a decline in the market price of our stock. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material adverse effect on our stated operating results and harm our reputation. If we are unable to implement these requirements effectively or efficiently, it could harm our operations, financial reporting, or financial results and could result in an adverse opinion on our internal control over financial reporting from our independent registered public accounting firm.

Our management team has broad discretion to use the net proceeds from this offering and the concurrent private placement, the initial payments to us under our Celgene Collaboration Agreement, and the sale of our shares to Celgene, and our investment of these proceeds may not yield a favorable return. We may invest the proceeds of this offering or the Celgene transaction in ways with which investors disagree.

We expect to use the net proceeds from this offering and the concurrent private placement for working capital or other general corporate purposes. We may also use a portion of the net proceeds to acquire, license and invest in complementary products, technologies or businesses; however, we currently have no agreements or commitments to complete any such transaction. However, within the scope of our plan, and in light of the various risks to our business that are set forth in this section, our management has broad discretion over the use of proceeds from this offering and the concurrent private placement, the initial payments to us under our Celgene Collaboration Agreement, and the sale of our shares to Celgene, and we could spend the proceeds from these transactions in ways our stockholders may not agree with or that do not yield a favorable return, if at all. In addition, until the proceeds are used, they may be placed in investments that do not produce significant income or that may lose value. If we do not invest or apply the proceeds in ways that improve our operating results, we may fail to achieve expected financial results, which could cause our stock price to decline.

Table of Contents

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated into this prospectus by reference, contains forward-looking statements that are based on our management's beliefs and assumptions and on information currently available to our management. 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 the following words: "may," "will," "could," "would," "should," "expect," "intend," "plan," "anticipate," "believe," "estimate," "predict," "project," "aim," "potential," "continue," "ongoing," "goal," "work to," or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. These statements involve risks, uncertainties and other factors that may cause actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus, we caution you that these statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain. Forward-looking statements in this prospectus include, but are not limited to, statements about:

- the success, cost and timing of our product development activities and clinical trials;
- our ability and the potential to successfully advance our technology platform to improve the safety and effectiveness of our existing product candidates;
- the potential for our identified research priorities to advance our chimeric antigen receptor and T cell receptor technologies;
- the potential of our collaboration with Celgene and the ability and willingness of Celgene to be our commercialization partner outside of North America;
- the ability and willingness of our third-party research institution collaborators to continue research and development activities relating to our product candidates;
- the potential of our other research and development and strategic collaborations, including our collaborations with Editas, Fate, and MedImmune;
- our ability to obtain orphan drug designation or breakthrough status for our CD19 product candidates and any other product candidates, or to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations and/or warnings in the label of an approved product candidate;
- the ability to license additional intellectual property relating to our product candidates;
- our expectations regarding our ability to obtain and maintain intellectual property protection for our product candidates;
- our ability to commercialize our products in light of the intellectual property rights of others;
- our ability to obtain funding for our operations, including funding necessary to complete further development and commercialization of our product candidates;
- our plans to research, develop and commercialize our product candidates;
- the potential of the technologies we have acquired through strategic transactions, such as the acquisition of Stage Cell Therapeutics GmbH, X-Body, Inc., AbVitro, and RedoxTherapies, Inc. ("RedoxTherapies");
- the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- regulatory developments in the United States and foreign countries;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;

Table of Contents

- our plans to use our manufacturing facility in Bothell, Washington for supply of product candidate for our clinical trials and for commercial production, if approved;
- the success of competing therapies that are or may become available;
- our ability to attract and retain key scientific or management personnel;
- the accuracy of our estimates regarding expenses, success payments, future revenue, capital requirements, profitability, and needs for additional financing;
- fluctuations in the trading price of our common stock;
- the anticipated benefits of our litigation settlement with the Trustees of the University of Pennsylvania and Novartis;
- the impact of our decision to cease development of JCAR015;
- our plans regarding our corporate headquarters; and
- our use of the proceeds from this offering, the concurrent private placement and proceeds received from our ongoing arrangements with Celgene.

In addition, you should refer to the "Risk Factors" section of this prospectus for a discussion of other important factors that may cause actual results to differ materially from those expressed or implied by the forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this prospectus will prove to be accurate. Furthermore, if the forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

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

This prospectus also contains estimates, projections and other information concerning our industry, our business, and the markets for our products and product candidates, including data regarding the estimated size of those markets, their projected growth rates, the perceptions and preferences of patients and physicians regarding certain therapies and other prescription, prescriber and patient data, as well as data regarding market research, estimates and forecasts prepared by our management. We obtained the industry, market and other data throughout this prospectus from our own internal estimates and research, as well as from industry publications and research, surveys and studies conducted by third parties.

Table of Contents

USE OF PROCEEDS

We estimate that the net proceeds to us from the sale of the shares of our common stock in this offering and the concurrent private placement will be approximately $262.2 million, or approximately $301.6 million if the underwriters exercise their option to purchase additional shares in full, at a price of $41.00 per share and after deducting underwriting discounts and commissions, in the case of the offering, and estimated offering expenses.

We currently expect to use the net proceeds from this offering and the concurrent private placement for working capital and other general corporate purposes. We expect to also use a portion of the net proceeds to acquire, license and invest in complementary products, technologies or businesses; however, we currently have no agreements or commitments to complete any such transaction.

Pending their uses, we plan to invest the net proceeds of this offering and the concurrent private placement in interest-bearing, investment-grade instruments, investment-grade corporate notes/bonds, certificates of deposit, and/or direct or guaranteed obligations of the U.S. government. We cannot predict whether the proceeds invested will yield a favorable return. Our management will have broad discretion in the application of the net proceeds we receive from this offering and the concurrent private placement, and investors will be relying on the judgment of our management regarding the application of the net proceeds.

PRICE RANGE OF COMMON STOCK

Our common stock has been listed on The NASDAQ Global Select Market under the symbol “JUNO” since December 19, 2014. Prior to that date, there was no public trading market for our common stock. The following table sets forth the high and low intraday sales price per share of our common stock as reported on The NASDAQ Global Select Market for the period indicated:

	High	Low
Year Ended December 31, 2017:		
First Quarter	$ 25.50	$ 18.90
Second Quarter	31.97	21.02
Third Quarter (through September 21, 2017)	47.00	26.40
Year Ended December 31, 2016:		
First Quarter	$ 45.76	$ 22.37
Second Quarter	49.72	35.92
Third Quarter	40.86	27.15
Fourth Quarter	33.00	17.52
Year Ended December 31, 2015:		
First Quarter	$ 64.55	$ 38.00
Second Quarter	69.28	40.60
Third Quarter	56.29	33.00
Fourth Quarter	57.82	39.36

On September 21, 2017, the last reported sale price for our common stock on The NASDAQ Global Select Market was $41.62 per share. As of June 30, 2017, there were approximately 102 holders of record of our common stock. The actual number of stockholders is greater than this number of record holders, and includes stockholders who are beneficial owners, but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

Table of Contents

DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock or any other securities. We anticipate that we will retain all available funds and any future earnings, if any, for use in the operation of our business and do not anticipate paying cash dividends in the foreseeable future. In addition, future debt instruments may materially restrict our ability to pay dividends on our common stock. Payment of future cash dividends, if any, will be at the discretion of the board of directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, the requirements of current or then-existing debt instruments and other factors the board of directors deems relevant.

Table of Contents

DILUTION

Investors purchasing our common stock in this offering will be diluted to the extent of the difference between the price to the public per share of our common stock and the as adjusted net tangible book value per share of our common stock immediately after the offering.

Net tangible book value represents our total tangible assets (total assets less intangible assets) less total liabilities divided by the number of outstanding shares of common stock. As of June 30, 2017, our net tangible book value was $637.5 million, or $6.08 per share. After giving effect to the sale and issuance of 6,759,415 shares of our common stock in this offering and the concurrent private placement at a price of $41.00 per share and after deducting underwriting discounts and commissions, in the case of the offering, and estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2017 would have been approximately $899.7 million, or $8.06 per share. This represents an immediate increase in as adjusted net tangible book value of $1.98 per share to existing stockholders and an immediate dilution of $32.94 per share to new investors participating in this offering.

The following table illustrates this dilution on a per share basis to new investors:

Price per share		$41.00
Net tangible book value per share as of June 30, 2017	$6.08	
Increase in net tangible book value per share to existing stockholders attributable to new investors	1.98	
As adjusted net tangible book value per share after this offering		8.06
Dilution per share to investors participating in this offering		$32.94

If the underwriters exercise in full their option to purchase 915,000 additional shares of common stock in this offering, the as adjusted net tangible book value per share after the offering and the concurrent private placement would be $8.34 per share, the incremental increase in the net tangible book value per share to existing stockholders would be $0.28 per share and the aggregate dilution to investors participating in this offering would be $32.66 per share.

The outstanding share information in the tables above excludes the following shares as of June 30, 2017:

- 1,324,981 shares of common stock outstanding subject to vesting as of June 30, 2017, which shares were issued pursuant to our 2013 Equity Incentive Plan, which shares may become available for issuance under our 2014 Equity Incentive Plan if such shares are forfeited;
- 11,062,145 shares of common stock issuable upon exercise of options outstanding as of June 30, 2017, having a weighted-average exercise price of $27.77 per share, which shares may become available for future awards under our 2014 Equity Incentive Plan if such options are cancelled or expire unexercised;
- 1,627,256 shares of common stock subject to restricted stock unit awards outstanding as of June 30, 2017, which shares may become available for future awards under our 2014 Equity Incentive Plan if such awards are cancelled prior to vesting;
- 499,345 shares of common stock subject to options or restricted stock unit awards granted under our 2014 Equity Incentive Plan between July 1, 2017 and September 19, 2017;
- 7,676,599 shares of common stock reserved for future awards under the 2014 Equity Incentive Plan as of June 30, 2017;
- 5,740,926 shares of common stock reserved for issuance under the 2014 Employee Stock Purchase Plan as of June 30, 2017;
- 79,403 shares of common stock outstanding subject to vesting as of June 30, 2017, which shares were issued in connection with our acquisitions of X-Body, Inc. and AbVitro Inc.;

Table of Contents

- up to $6.5 million in shares that may be issued to the founder of RedoxTherapies upon the achievement of a specified clinical milestone under the agreement by which we acquired RedoxTherapies;
- up to $25 million in shares that may be issued to Opus Bio upon the achievement of a specified clinical milestone under our exclusive license agreement with Opus Bio;
- shares that may be issued pursuant to top-up or acquisition rights under the Celgene Share Purchase Agreement; and
- up to $440 million in shares that may be issued pursuant to success payments under our agreements with FHCRC and MSK.

To the extent that new options or restricted stock unit awards are issued under the equity benefit plans or we issue additional shares of common stock in the future, there will be further dilution to investors participating in this offering.

Table of Contents

CAPITALIZATION

The following table summarizes our cash and cash equivalents and capitalization as of June 30, 2017:

- on an actual basis; and
- on an as adjusted basis to give effect to the sales in this offering and the concurrent private placement of an aggregate of 6,759,415 shares of common stock at a price of $41.00 per share after deducting underwriting discounts and commissions, in the case of this offering, and estimated offering expenses.

	As of June 30, 2017	
	Actual	As Adjusted
	(In thousands, except share and per share amounts)	
Cash and cash equivalents	$ 218,694	$ 480,913
Stockholders' equity (deficit):		
Preferred stock, $0.0001 par value; 5,000,000 shares authorized, no shares issued or outstanding	—	—
Common stock, $0.0001 par value; 495,000,000 shares authorized; 104,896,965 shares issued and outstanding, actual; 111,656,380 shares issued and outstanding, as adjusted	$ 11	$ 12
Additional paid-in capital	1,950,718	2,212,936
Accumulated other comprehensive income	630	630
Accumulated deficit	(1,014,174)	(1,014,174)
Total stockholders' equity	937,185	1,199,404
Total capitalization	$ 1,268,965	$ 1,531,184

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

- 1,324,981 shares of common stock outstanding subject to vesting as of June 30, 2017, which shares were issued pursuant to our 2013 Equity Incentive Plan, which shares may become available for issuance under our 2014 Equity Incentive Plan if such shares are forfeited;
- 11,062,145 shares of common stock issuable upon exercise of options outstanding as of June 30, 2017, having a weighted-average exercise price of $27.77 per share, which shares may become available for future awards under our 2014 Equity Incentive Plan if such options are cancelled or expire unexercised;
- 1,627,256 shares of common stock subject to restricted stock unit awards outstanding as of June 30, 2017, which shares may become available for future awards under our 2014 Equity Incentive Plan if such awards are cancelled prior to vesting;
- 499,345 shares of common stock subject to options or restricted stock unit awards granted under our 2014 Equity Incentive Plan between July 1, 2017 and September 19, 2017;
- 7,676,599 shares of common stock reserved for future awards under the 2014 Equity Incentive Plan as of June 30, 2017;
- 5,740,926 shares of common stock reserved for issuance under the 2014 Employee Stock Purchase Plan as of June 30 2017;
- 79,403 shares of common stock outstanding subject to vesting as of June 30, 2017, which shares were issued in connection with our acquisitions of X-Body, Inc. and AbVitro Inc.;
- up to $6.5 million in shares that may be issued to the founder of RedoxTherapies upon the achievement of a specified clinical milestone under the agreement by which we acquired RedoxTherapies;

Table of Contents

- up to $25 million in shares that may be issued to Opus Bio upon the achievement of a specified clinical milestone under our exclusive license agreement with Opus Bio;
- shares that may be issued pursuant to top-up or acquisition rights under the Celgene Share Purchase Agreement; and
- up to $440 million in shares that may be issued pursuant to success payments under our agreements with FHCRC and MSK.

Table of Contents

MATERIAL U.S. FEDERAL INCOME AND ESTATE TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following summary describes the material U.S. federal income and estate tax consequences of the acquisition, ownership and disposition of our common stock acquired in this offering by Non-U.S. Holders (as defined below). This discussion does not address all aspects of U.S. federal income and estate taxes and does not deal with foreign, state and local consequences that may be relevant to Non-U.S. Holders in light of their particular circumstances, nor does it address U.S. federal tax consequences other than income and estate taxes. Special rules different from those described below may apply to certain Non-U.S. Holders that are subject to special treatment under the Internal Revenue Code of 1986 (the "Code"), such as financial institutions, insurance companies, tax-exempt organizations, broker-dealers and traders in securities, U.S. expatriates, "controlled foreign corporations," "passive foreign investment companies," corporations that accumulate earnings to avoid U.S. federal income tax, persons that hold our common stock as part of a "straddle," "hedge," "conversion transaction," "synthetic security" or integrated investment or other risk reduction strategy, persons subject to the alternative minimum tax or federal tax on net investment income, partnerships and other pass-through entities, and investors in such pass-through entities. Such Non-U.S. Holders are urged to consult their own tax advisors to determine the U.S. federal, state, local and other tax consequences that may be relevant to them. Furthermore, the discussion below is based upon the provisions of the Code, and Treasury Regulations, rulings and judicial decisions thereunder as of the date hereof, and such authorities may be repealed, revoked or modified, perhaps retroactively, so as to result in U.S. federal income and estate tax consequences different from those discussed below. We have not requested a ruling from the U.S. Internal Revenue Service (the "IRS"), with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with such statements and conclusions. This discussion assumes that the Non-U.S. Holder holds our common stock as a "capital asset" within the meaning of Section 1221 of the Code (generally, property held for investment).

If an entity treated as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding our common stock and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

Persons considering the purchase of our common stock pursuant to this offering should consult their own tax advisors concerning the U.S. federal income and estate tax consequences of acquiring, owning and disposing of our common stock in light of their particular situations as well as any consequences arising under the laws of any other taxing jurisdiction, including any state, local or foreign tax consequences.

For the purposes of this discussion, a "Non-U.S. Holder" is, for U.S. federal income tax purposes, a beneficial owner of our common stock that is neither a U.S. Holder, nor a partnership (or other entity treated as a partnership for U.S. federal income tax purposes regardless of its place of organization or formation). A "U.S. Holder" means a beneficial owner of our common stock that is for U.S. federal income tax purposes (1) an individual who is a citizen or resident of the United States, (2) a corporation or other entity treated as a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia, (3) an estate the income of which is subject to U.S. federal income taxation regardless of its source or (4) a trust if it (a) is subject to the primary supervision of a court within the United States and one or more U.S. persons have the authority to control all substantial decisions of the trust or (b) has a valid election in effect under applicable Treasury Regulations to be treated as a U.S. person.

Distributions

Subject to the discussion below, distributions, if any, made on our common stock to a Non-U.S. Holder to the extent made out of our current or accumulated earnings and profits (as determined under U.S. federal income

Table of Contents

tax principles) generally will constitute dividends for U.S. tax purposes and will be subject to withholding tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. To obtain a reduced rate of withholding under a treaty, a Non-U.S. Holder generally will be required to provide us with a properly executed IRS Form W-8BEN or W-8BEN-E, or other appropriate form, certifying the Non-U.S. Holder's entitlement to benefits under that treaty. In the case of a Non-U.S. Holder that is an entity, Treasury Regulations and the relevant tax treaty provide rules to determine whether, for purposes of determining the applicability of a tax treaty, dividends will be treated as paid to the entity or to those holding an interest in that entity. If a Non-U.S. Holder holds stock through a financial institution or other agent acting on the holder's behalf, the holder will be required to provide appropriate documentation to such agent. The holder's agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. If you are eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty, you may be able to obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim for a refund with the IRS.

We generally are not required to withhold tax on dividends paid to a Non-U.S. Holder that are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, are attributable to a permanent establishment that such holder maintains in the United States) if a properly executed IRS Form W-8ECI, stating that the dividends are so connected, is furnished to us (or, if stock is held through a financial institution or other agent, to such agent). In general, such effectively connected dividends will be subject to U.S. federal income tax, on a net income basis at the regular graduated rates. A corporate Non-U.S. Holder receiving effectively connected dividends may also be subject to an additional "branch profits tax," which is imposed, under certain circumstances, at a rate of 30% (or such lower rate as may be specified by an applicable treaty) on the corporate Non-U.S. Holder's effectively connected earnings and profits, subject to certain adjustments. Non-U.S. Holders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

To the extent distributions on our common stock, if any, exceed our current and accumulated earnings and profits, they will first reduce the Non-U.S. Holder's adjusted basis in our common stock, but not below zero, and then will be treated as gain to the extent of any excess, and taxed in the same manner as gain realized from a sale or other disposition of common stock as described in the next section.

Gain on Disposition of Our Common Stock

Subject to the discussion below regarding backup withholding and foreign accounts, a Non-U.S. Holder generally will not be subject to U.S. federal income tax with respect to gain realized on a sale or other disposition of our common stock unless (1) the gain is effectively connected with a trade or business of such Non-U.S. Holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment that such holder maintains in the United States), (2) the Non-U.S. Holder is a nonresident alien individual and is present in the United States for 183 or more days in the taxable year of the disposition and certain other conditions are met or (3) we are or have been a "United States real property holding corporation" within the meaning of Code Section 897(c)(2) at any time within the shorter of the five-year period ending on the date of such disposition or such Non-U.S. Holder's holding period. In general, we would be a U.S. real property holding corporation if interests in U.S. real estate comprised (by fair market value) at least half of our business assets. We believe that we are not, and do not anticipate becoming, a U.S. real property holding corporation. Even if we are treated as a U.S. real property holding corporation, gain realized by a Non-U.S. Holder on a disposition of our common stock will not be subject to U.S. federal income tax so long as (a) the Non-U.S. Holder owned, directly, indirectly and constructively, no more than five percent of our common stock at all times within the shorter of (i) the five-year period ending on the date of the disposition and (ii) the holder's holding period and (b) our common stock is regularly traded on an established securities market.

If you are a Non-U.S. Holder described in (1) above, you will be required to pay tax on the net gain derived from the sale at regular graduated U.S. federal income tax rates, unless a specific treaty exemption applies, and corporate Non-U.S. Holders described in (1) above may be subject to the additional branch profits tax at a 30%

Table of Contents

rate or such lower rate as may be specified by an applicable income tax treaty. If you are an individual Non-U.S. Holder described in (2) above, you will be required to pay a flat 30% tax on the gain derived from the sale, which gain may be offset by U.S. source capital losses (even though you are not considered a resident of the United States).

Information Reporting Requirements and Backup Withholding

Generally, we (or our paying agents) must report information to the IRS with respect to any dividends we pay on our common stock, including the amount of any such dividends, the name and address of the recipient, and the amount, if any, of tax withheld. A similar report is sent to the holder to whom any such dividends are paid. Pursuant to tax treaties or certain other agreements, the IRS may make its reports available to tax authorities in the recipient's country of residence.

Dividends paid by us (or our paying agents) to a Non-U.S. Holder may also be subject to U.S. backup withholding. U.S. backup withholding generally will not apply to a Non-U.S. Holder who provides a properly executed IRS Form W-8BEN, W-8BEN-E or W-8ECI, or otherwise establishes an exemption.

Under current U.S. federal income tax law, U.S. information reporting and backup withholding requirements generally will apply to the proceeds of a disposition of our common stock effected by or through a U.S. office of any broker, U.S. or foreign, except that information reporting and such requirements may be avoided if the holder provides a properly executed IRS Form W-8BEN, W-8BEN-E or W-8ECI, or otherwise meets documentary evidence requirements for establishing Non-U.S. Holder status or otherwise establishes an exemption. Generally, U.S. information reporting and backup withholding requirements will not apply to a payment of disposition proceeds to a Non-U.S. Holder when the transaction is effected outside the U.S. through a non-U.S. office of a non-U.S. broker. Information reporting and backup withholding requirements may, however, apply to a payment of disposition proceeds if the broker has actual knowledge, or reason to know, that the holder is, in fact, a U.S. person. For information reporting purposes, certain brokers with substantial U.S. ownership or operations will generally be treated in a manner similar to U.S. brokers.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be credited against the tax liability of persons subject to backup withholding, provided that the required information is timely furnished to the IRS.

Foreign Accounts

Under provisions of the Code generally referred to as "FATCA," a U.S. federal withholding tax of 30% may apply to dividends on and the gross proceeds of a disposition of our common stock paid to a foreign financial institution (as specifically defined by applicable 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 U.S. account holders of such institution (which includes certain equity holders of such institution, as well as certain account holders that are foreign entities with U.S. owners). Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. This U.S. federal withholding tax of 30% will also apply to dividends on and the gross proceeds of a disposition of our common stock to a non-financial foreign entity unless such entity provides the withholding agent with either a certification that it does not have any substantial direct or indirect U.S. owners or provides information regarding substantial direct and indirect U.S. owners of the entity. The withholding tax described above will not apply if the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from the rules. Under certain circumstances, a Non-U.S. Holder might be eligible for refunds or credits of such taxes. Holders are encouraged to consult with their own tax advisors regarding the possible implications of these rules to their investment in our common stock.

Under the applicable Treasury Regulations, the withholding provisions described above generally apply to payments of dividends made on or after July 1, 2014 and will generally apply to payments of gross proceeds

Table of Contents

from a sale or other disposition of common stock on or after January 1, 2019. Prospective investors should consult their tax advisors regarding the potential application of withholding under FATCA to their investment in our common stock.

Federal Estate Tax

An individual Non-U.S. Holder who is treated as the owner of, or has made certain lifetime transfers of, an interest in our common stock will be required to include the value thereof in his or her gross estate for U.S. federal estate tax purposes, and may be subject to U.S. federal estate tax unless an applicable estate tax treaty provides otherwise, even though such individual was not a citizen or resident of the United States at the time of his or her death.

Table of Contents

DESCRIPTION OF CAPITAL STOCK

The following is a summary of the rights of our common stock and convertible preferred stock. This summary is not complete. For more detailed information, please see our certificate of incorporation and bylaws, which have been filed with the SEC and are incorporated by reference to our registration statement of which this prospectus is a part.

Our authorized capital stock consists of 495,000,000 shares of common stock, par value $0.0001 per share, and 5,000,000 shares of preferred stock, par value $0.0001 per share.

Common Stock

Outstanding Shares

Based on 106,301,349 shares of common stock outstanding as of June 30, 2017 (including 1,404,384 shares of common stock subject to vesting), and after giving effect to the issuance of an aggregate of 6,759,415 shares of common stock in this offering and the concurrent private placement, there will be 113,060,764 shares of common stock outstanding upon the closing of this offering. As of June 30, 2017, we had approximately 102 record holders of our common stock. As of June 30, 2017, there were 12,689,401 shares of common stock subject to outstanding options and restricted stock unit awards.

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our certificate of incorporation and bylaws do not provide for cumulative voting rights. Because of this, the holders of a plurality of the shares of 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 be applicable to any then-outstanding preferred stock, holders of common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds. For more information, see the section of this prospectus captioned “Dividend Policy.”

Liquidation

In the event of our liquidation, dissolution or winding up, holders of common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of preferred stock.

Rights and Preferences

Holders of common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to the common stock. The rights, preferences and privileges of the holders of 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 in the future.

Table of Contents

Fully Paid and Nonassessable

All of our outstanding shares of common stock are, and the shares of common stock to be issued pursuant to this offering, when paid for, will be fully paid and nonassessable.

Preferred Stock

Our board of directors has the authority, without further action by the stockholders, to issue up to 5,000,000 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 closing of this offering, no shares of preferred stock will be outstanding, and we have no present plan to issue any shares of preferred stock.

Registration Rights

Under our investors' rights agreement, the holders of approximately 19,823,548 shares of common stock or their transferees, have the right to require us to register the offer and sale of their shares, or to include their shares in any registration statement we file, in each case as described below. Additionally, any shares of common stock issued in payment of success payments with FHCRC and MSK or upon achievement of a milestone under the license with Opus Bio will have the same registration rights described below.

In connection with a share purchase agreement we entered into with Celgene, we also entered into a voting and standstill agreement (referred to below as the "voting and standstill agreement") and registration rights agreement with Celgene in June 2015. See the section captioned "Licenses and Third-Party Collaborations" in Part I—Item 1—"Business" in our Annual Report on Form 10-K for the year ended December 31, 2016 for further discussion of our agreements with Celgene. Under the terms of the voting and standstill agreement, Celgene has agreed not to dispose of any shares of common stock beneficially owned by it during certain specified lock-up periods, other than under certain exceptions. Following the expiration of such lock-up periods, Celgene may sell shares subject to certain manner of sale and volume limitations, as well as restrictions on sales to persons defined as "competitors." We concurrently agreed, pursuant to a separate registration rights agreement (referred to in this prospectus as the "Celgene registration rights agreement"), to provide Celgene with certain registration rights in connection with the shares it is permitted to sell under the voting and standstill agreement. The stock purchase agreement with Celgene dated as of the date of this prospectus and entered into in connection with the concurrent private placement also amends certain provisions of the voting and standstill agreement and registration rights agreement in order to subject the shares purchased in the concurrent private placement to the same terms and conditions under such agreements as if the shares had been purchased pursuant to the Celgene Share Purchase Agreement, including with respect to registration rights.

Investors' Rights Agreement

Demand Registration Rights

The holders of at least a majority of the shares having registration rights have the right to demand that we use commercially reasonable efforts to file a registration statement for the registration of the offer and sale of at least such number of shares with an anticipated offering proceeds in excess of $50.0 million. We are only obligated to file up to two registration statements in connection with the exercise of demand registration rights. These registration rights are subject to specified conditions and limitations, including the right of the underwriters to limit the number of shares included in any such registration under certain circumstances and our

Table of Contents

ability to defer the filing of a registration statement with respect to an exercise of such demand registration rights for up to 90 days under certain circumstances.

Form S-3 Registration Rights

The holders of registrable securities are entitled to certain Form S-3 registration rights so long as the aggregate price of shares to be offered and sold under such registration statement on Form S-3 is at least $2.0 million. We are not required to effect more than one registration on Form S-3 in any 12-month period pursuant to the fourth amended and restated investor rights agreement. These registration rights are subject to specified conditions and limitations, including our ability to defer the filing of a registration statement with respect to an exercise of such Form S-3 registration rights for up to 90 days under certain circumstances.

Piggyback Registration Rights

If we propose to register the offer and sale of any of our securities under the Securities Act either for our own account or for the account of other stockholders, a stockholder with registration rights will have the right, subject to certain exceptions, to include their shares of common stock in the registration statement. These registration rights are subject to specified conditions and limitations, including the right of the underwriters to limit the number of shares included in any such registration statement under certain circumstances, but not below 50% of the total number of shares covered by the registration statement except in the case of our initial public offering, in which case all such shares may be excluded.

Expenses of Registration

We will pay all expenses relating to any demand registrations, Form S-3 registrations and piggyback registrations, subject to specified exceptions.

Termination

The registration rights terminate upon the earliest of (1) December 23, 2019, (2) as to a given holder of registration rights, when such holder of registration rights can sell all of such holder's registrable securities in a 90 day-period pursuant to Rule 144 promulgated under the Securities Act and (3) a change in control of Juno.

Celgene Registration Rights Agreement

Demand Registration Rights

Pursuant to the Celgene registration rights agreement, if and as Celgene is permitted to sell shares under the voting and standstill agreement, Celgene has the right to demand that we prepare and file with the Securities and Exchange Commission a registration statement on Form S-3 for purposes of registering the resale of the shares specified in Celgene's written request (subject to lock-up period restrictions under the voting and standstill agreement) or, if Juno is not at such time eligible for the use of Form S-3, use our commercially reasonable efforts to prepare and file a registration statement on a Form S-1 or alternative form that permits the resale of the shares. We are only obligated to file up to two registration statements in any 12-month period in connection with the exercise of demand registration rights. These registration rights are subject to specified conditions and limitations, including our ability to limit the number of shares included in any such registration under certain circumstances. The investors' rights agreement was amended in June 2015 and was amended prior to the completion of the offering to waive any notice requirements with respect to a demand registration request under the Celgene registration rights agreement.

Piggyback Registration Rights

Following the effectiveness of a demand registration statement filed at Celgene's request, if we propose to register the offer and sale of any of our securities under the Securities Act either for our own account or for the

Table of Contents

account of other stockholders, Celgene may have the right, subject to certain exceptions, to include its shares of common stock in the registration statement. These registration rights are subject to specified conditions and limitations, including the requirement that inclusion of such securities not reduce the amount of securities to be registered on such registration statement by holders under the investors' rights agreement, and all such shares may be excluded if such requirement is not satisfied.

In addition, without the written consent of Celgene, we cannot file a registration statement covering the resale of any our securities held by any person other than Celgene unless we file, at the same time or before, any registration statement covering the resale of Celgene's securities required under the Celgene registration rights agreement, and that registration statement has been declared effective. However, this provision of the Celgene registration rights agreement does not prevent us from fulfilling our obligations under the investors' rights agreement.

Expenses of Registration

We will pay all expenses relating to any demand registrations and piggyback registrations, excluding any legal fees of the selling holder(s) above $10,000 per registration statement, and any underwriting discounts and selling commissions.

Termination

The registration rights terminate upon the earliest of (1) as to a given holder of registration rights, when such holder of registration rights can sell all of such holder's registrable securities in a 90 day-period pursuant to Rule 144 promulgated under the Securities Act, (2) 36 cumulative months during which one or more registration statements under the Celgene registration rights agreement is effective and (3) Juno's unilateral termination upon a material breach by Celgene of certain provisions of the voting and standstill agreement.

Anti-Takeover Effects of Delaware and Washington Law and Our Certificate of Incorporation and Bylaws

Delaware Law

We are subject to Section 203 of the Delaware General Corporation Law. Section 203 generally prohibits a publicly held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned 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
- on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;

Table of Contents

- any sale, transfer, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

Washington Business Corporation Act

The laws of Washington, where our principal executive offices are located, impose restrictions on certain transactions between certain foreign corporations and significant stockholders. In particular, the Washington Business Corporation Act (the "WBCA"), prohibits a "target corporation," with certain exceptions, from engaging in certain "significant business transactions" with a person or group of persons which beneficially owns 10% or more of the voting securities of the target corporation, an "acquiring person," for a period of five years after such acquisition, unless the transaction or acquisition of shares is approved by a majority of the members of the target corporation's board of directors prior to the time of acquisition. Such prohibited transactions may include, among other things:

- any merger or consolidation with, disposition of assets to, or issuance or redemption of stock to or from, the acquiring person;
- any termination of 5% or more of the employees of the target corporation as a result of the acquiring person's acquisition of 10% or more of the shares; and
- allowing the acquiring person to receive any disproportionate benefit as a stockholder.

After the five-year period, a significant business transaction may take place as long as it complies with certain fair price provisions of the statute or is approved at an annual or special meeting of stockholders.

We will be considered a "target corporation" so long as our principal executive office is located in Washington, and: (1) a majority of our employees are residents of the state of Washington or we employ more than one thousand residents of the state of Washington; (2) a majority of our tangible assets, measured by market value, are located in the state of Washington or we have more than $50.0 million worth of tangible assets located in the state of Washington; and (3) any one of the following: (a) more than 10% of our stockholders of record are resident in the state of Washington; (b) more than 10% of our shares are owned of record by state residents; or (c) 1,000 or more of our stockholders of record are resident in the state.

If we meet the definition of a target corporation, the WBCA may have the effect of delaying, deferring or preventing a change of control.

Certificate of Incorporation and Bylaws

Provisions of the certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might

Table of Contents

otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, the certificate of incorporation and bylaws:

- permit the board of directors to issue up to 5,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change in our control;
- provide that the authorized number of directors may be changed only by resolution of the board of directors;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide the board of directors into three classes;
- provide that a director may only be removed from the board of directors by the stockholders for cause;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and also meet specific requirements as to the form and content of a stockholder's notice;
- not provide for cumulative voting rights (therefore allowing the holders of a plurality of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chairman of the board, our chief executive officer (or president, in the absence of a chief executive officer) or by the board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors;
- provide that stockholders will be permitted to amend the bylaws only upon receiving at least two-thirds of the votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class; and
- provide that the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (1) any derivative action or proceeding brought on behalf of our company, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to the company or our stockholders, (3) any action asserting a claim against our company arising pursuant to any provision of the Delaware General Corporation Law or our certificate of incorporation or bylaws, (4) any action to interpret, apply, enforce, or determine the validity of our certificate of incorporation or bylaws, or (5) any action asserting a claim against our company governed by the internal affairs doctrine. Although our certificate of incorporation contains the choice of forum provision described above, it is possible that a court could rule that such a provision is inapplicable for a particular claim or action or that such provision is unenforceable.

The amendment of any of these provisions would require approval by the holders of at least two-thirds of our then outstanding common stock, voting as a single class.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Wells Fargo Bank, National Association. The transfer agent and registrar's address is Wells Fargo Shareholder Services, 1110 Centre Pointe Curve, Suite 101, Mendota Heights, MN 55120-4100.

Listing

Our common stock is listed on The NASDAQ Global Select Market under the symbol "JUNO."

Table of Contents

UNDERWRITERS

Under the terms and subject to the conditions in an underwriting agreement dated the date of this prospectus, the underwriters named below, for whom Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC are acting as representatives, have severally agreed to purchase, and we have agreed to sell to them, severally, the number of shares indicated below:

Name	Number of Shares
Morgan Stanley & Co. LLC	2,074,000
J.P. Morgan Securities LLC	2,074,000
Barclays Capital Inc.	640,500
Leerink Partners LLC	640,500
Wells Fargo Securities, LLC	223,667
Raymond James & Associates, Inc.	223,667
Wedbush Securities Inc.	223,666
Total:	6,100,000

The underwriters and the representatives are collectively referred to as the "underwriters" and the "representatives," respectively.

Pursuant to a stock purchase agreement with Celgene, dated as of the date of this prospectus, we will sell to Celgene 659,415 shares of our common stock (or up to 758,327 shares if the underwriters exercise in full their option to purchase additional shares) in a private placement exempt from the registration requirements of the Securities Act of 1933, as amended, at a sale price equal to the price to the public in this offering. We will receive the full proceeds and will not pay any underwriting discounts or commissions with respect to the shares that are sold in the private placement. Aggregate proceeds from the private placement to Celgene will be $27.0 million (or $31.1 million if the underwriters exercise in full their option to purchase additional shares). The number of shares we will sell to Celgene constitutes approximately 9.76% of the aggregate number of the shares sold in this offering and the private placement, which is equal to the percentage of our common stock Celgene beneficially owned following its last exercise of its top-up purchase rights pursuant to the Celgene Share Purchase Agreement. The consummation of the concurrent private placement is contingent on the closing of this offering. Whether or not Celgene purchases any or all of the shares of our common stock that they have agreed to purchase, the underwriters will be committed to purchase the shares of common stock that they have agreed to purchase pursuant to the underwriting agreement if the underwriters purchase any shares.

The underwriters are offering the shares of common stock subject to their acceptance of the shares from us and subject to prior sale. The underwriting agreement provides that the obligations of the several underwriters to pay for and accept delivery of the shares of common stock offered by this prospectus are subject to the approval of certain legal matters by their counsel and to certain other conditions. The underwriters are obligated to take and pay for all of the shares of common stock offered by this prospectus if any such shares are taken. However, the underwriters are not required to take or pay for the shares covered by the underwriters' option to purchase additional shares described below.

The underwriters initially propose to offer part of the shares of common stock directly to the public at the offering price listed on the cover page of this prospectus and part to certain dealers. After the initial offering of the shares of common stock, the offering price and other selling terms may from time to time be varied by the representatives.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to 915,000 additional shares of common stock at the price to the public listed on the cover page of this prospectus, less underwriting discounts and commissions. To the extent the option is exercised, each

Table of Contents

underwriter will become obligated, subject to certain conditions, to purchase about the same percentage of the additional shares of common stock as the number listed next to the underwriter's name in the preceding table bears to the total number of shares of common stock listed next to the names of all underwriters in the preceding table.

The following table shows the per share and total price to the public, underwriting discounts and commissions, and proceeds before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to an additional 915,000 shares of common stock.

		Total	
	Per Share	No Exercise	Full Exercise
Price to the public	$ 41.00	$250,100,000.00	$287,615,000.00
Underwriting discounts and commissions to be paid by us:	2.1115	12,880,150.00	14,812,172.50
Proceeds, before expenses, to us	$38.8885	$237,219,850.00	$272,802,827.50

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately $0.6 million. We have agreed to reimburse the underwriters for expense relating to clearance of this offering with the Financial Industry Regulatory Authority up to $40,000. The underwriters have agreed to reimburse us for certain expenses incurred by us in connection with this offering.

Our common stock is quoted on the NASDAQ Global Select Market under the trading symbol "JUNO".

We and all directors and executive officers have agreed that, without the prior written consent of Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC on behalf of the underwriters, we and they will not, during the period ending 90 days after the date of this prospectus (the "restricted period"):

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exercisable or exchangeable for shares of common stock;
- file any registration statement with the Securities and Exchange Commission relating to the offering of any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock; or
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock.

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise. In addition, we and each such person agrees that, without the prior written consent of Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any security convertible into or exercisable or exchangeable for common stock.

The restrictions described in the immediately preceding paragraph to do not apply to:

- the sale of shares to the underwriters;
- transactions by any person other than us relating to shares of common stock or other securities acquired in this offering or acquired in open market transactions after the completion of the offering of the shares; provided that no filing under Section 16(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") is required or voluntarily made in connection with subsequent sales of the common stock or other securities acquired in such open market transactions;

Table of Contents

- transactions by any person other than us relating to shares of common stock or other securities acquired in open market transactions after the completion of the offering of the shares; provided that no filing under Section 16(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), is required or voluntarily made in connection with subsequent sales of the common stock or other securities acquired in such open market transactions; or
- transfers of shares or any security convertible into or exercisable or exchangeable for shares of common stock (1) by will or intestacy, (2) by bona fide gift, (3) to the spouse, domestic partner, parent, child or grandchild (each, an "immediate family member") of the party subject to the lock-up restriction or to a trust formed for the benefit of one or more immediate family members, (4) if the party subject to the lock-up restriction is a corporation, partnership or other business entity (a) to another corporation, partnership or other business entity that controls, is controlled by or is under common control with such party or (b) as part of a disposition, transfer or distribution without consideration by the undersigned to its equity holders, limited partners or members or (5) if the undersigned is a trust, to a trustee or beneficiary of the trust, provided that in the case of any transfer or distribution, each transferee, donee or distributee executes and delivers a lock-up letter, and provided, further, in the case of clauses (2) through (5), that no filing under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares or other public announcement shall be required or shall be voluntarily made during the restricted period; provided, further, however, that the undersigned shall be permitted to make required filings on a Schedule 13D, Form 13F or Schedule 13G under the Exchange Act, provided that any such filings shall not be made in connection with a transfer, disposition or distribution of Common Stock or any security convertible into or exercisable of exchangeable for Common Stock;
- the transfer of shares or any securities convertible into shares of common stock upon a vesting event of our securities or upon the exercise of options or warrants to purchase securities, in each case on a "cashless" or "net exercise" basis or to cover tax withholding obligations of the party subject to the lock-up restriction in connection with such vesting or exercise; provided that any filing under Section 16(a) of the Exchange Act required in connection with such vesting or exercise shall clearly indicate in the footnotes thereto that the filing relates to the circumstances described in this paragraph;
- the issuance of shares of common stock upon the exercise of an option or a warrant, or the conversion of a security outstanding on the date of this prospectus;
- the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock, provided that (1) such plan does not provide for the transfer of common stock during the restricted period and (2) to the extent a public announcement or filing under the Exchange Act regarding the establishment of such plan is required of or made voluntarily, such announcement or filing shall include a statement to the effect that no transfer of common stock may be made under such during the restricted period;
- the transfer of shares common stock pursuant to certain trading plans established prior to the date of this prospectus pursuant to Rule 10b5-1 under the Exchange Act, which could potentially result in sales of up to 150,000 shares by certain executive officers depending on the trading price of our common stock during the applicable restricted period;
- the transfer of shares or any security convertible into or exercisable or exchangeable for shares of common stock to us pursuant to agreements under which we have the option to repurchase such shares or a right of first refusal with respect to transfers of such shares;
- the transfer of shares or any security convertible into or exercisable or exchangeable for shares of our common stock that occurs by operation of law, such as pursuant to a qualified domestic order or in connection with a divorce settlement; provided that (1) with respect to any transfer in connection with a divorce settlement, each transferee shall execute and deliver a lock-up letter and (2) to the extent a public announcement or filing under the Exchange Act regarding the transfer is required of or is

Table of Contents

voluntarily made, such announcement or filing shall include a statement to the effect that the transfer was made by operation of law and, if applicable, pursuant to a qualified domestic order or in connection with a divorce settlement, as applicable; or

- the transfer of shares or any security convertible into or exercisable or exchangeable for shares of common stock pursuant to a bona fide third-party tender offer, merger, consolidation or other similar transaction made to all holders of our common stock involving a change of control whereby our stockholders immediately prior to such transfer do not own a majority of the outstanding voting securities following such transfer in one or more transactions that has been approved by our board of directors (including, without limitation, entering into any lock-up, voting or similar agreement pursuant to which the undersigned may agree to transfer, sell, tender or otherwise dispose of common stock or such other securities in connection with any such transaction, or vote any securities in favor of any such transaction).

Morgan Stanley & Co. LLC and J.P. Morgan Securities LLC, in their sole discretion, may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time.

In order to facilitate the offering of the common stock, the underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the common stock. Specifically, the underwriters may sell more shares than they are obligated to purchase under the underwriting agreement, creating a short position. A short sale is covered if the short position is no greater than the number of shares available for purchase by the underwriters under the option. The underwriters can close out a covered short sale by exercising the option or purchasing shares in the open market. In determining the source of shares to close out a covered short sale, the underwriters will consider, among other things, the open market price of shares compared to the price available under the option. The underwriters may also sell shares in excess of the option, creating a naked short position. 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 common stock in the open market after pricing that could adversely affect investors who purchase in this offering. As an additional means of facilitating this offering, the underwriters may bid for, and purchase, shares of common stock in the open market to stabilize the price of the common stock. These activities may raise or maintain the market price of the common stock above independent market levels or prevent or retard a decline in the market price of the common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We and the underwriters have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act.

A prospectus in electronic format may be made available on websites maintained by one or more underwriters, or selling group members, if any, participating in this offering. The representatives may agree to allocate a number of shares of common stock to underwriters for sale to their online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters that may make Internet distributions on the same basis as other allocations.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various financial advisory and investment banking services for us, for which they received or will receive customary fees and expenses.

In addition, in the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related

Table of Contents

derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve our securities and instruments. The underwriters and their respective affiliates may also make investment recommendations or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long or short positions in such securities and instruments.

Selling Restrictions

Australia

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission, or ASIC, in relation to the offering. This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act.

Any offer in Australia of the shares of common stock may only be made to persons (the "Exempt Investors") who are "sophisticated investors" (within the meaning of section 708(8) of the Corporations Act), "professional investors" (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in section 708 of the Corporations Act so that it is lawful to offer the shares of Common stock without disclosure to investors under Chapter 6D of the Corporations Act.

The shares of common stock applied for by Exempt Investors in Australia must not be offered for sale in Australia for a period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring shares must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

Canada

The shares of our common stock may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of shares of our common stock must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws. Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor. Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 *Underwriting Conflicts* (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Table of Contents

Chile

The shares are not registered in the Securities Registry (Registro de Valores) or subject to the control of the Chilean Securities and Exchange Commission (Superintendencia de Valores y Seguros de Chile). This prospectus and other offering materials relating to the offer of the shares do not constitute a public offer of, or an invitation to subscribe for or purchase, the shares in the Republic of Chile, other than to individually identified purchasers pursuant to a private offering within the meaning of Article 4 of the Chilean Securities Market Act (Ley de Mercado de Valores) (an offer that is not "addressed to the public at large or to a certain sector or specific group of the public").

Dubai International Financial Centre

This prospectus relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority, or DFSA. This prospectus is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus nor taken steps to verify the information set forth herein and has no responsibility for the prospectus. The shares of common stock to which this prospectus relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus you should consult an authorized financial advisor.

European Economic Area

In relation to each member state of the European Economic Area (each, a "Member State"), no offer of any shares of our common stock which are the subject of the offering has been, or will be made to the public in that Member State, other than under the following exemptions under the Prospectus Directive:

A. to any legal entity which is a qualified investor as defined in the Prospectus Directive;

B. to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the representatives for any such offer; or

C. in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares of our common stock referred to in (a) to (c) above shall result in a requirement for us or any representative to publish a prospectus pursuant to Article 3 of the Prospectus Directive, or supplement a prospectus pursuant to Article 16 of the Prospectus Directive.

Each person located in a Member State to whom any offer of shares of our common stock is made or who receives any communication in respect of an offer of ordinary shares, or who initially acquires any shares of our common stock will be deemed to have represented, warranted, acknowledged and agreed to and with each representative and us that (1) it is a "qualified investor" within the meaning of the law in that Member State implementing Article 2(1)(e) of the Prospectus Directive; and (2) in the case of any shares of our common stock acquired by it as a financial intermediary as that term is used in Article 3(2) of the Prospectus Directive, the shares acquired by it in the offer have not been acquired on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any Member State other than qualified investors, as that term is defined in the Prospectus Directive, or in circumstances in which the prior consent of the representatives has been given to the offer or resale; or where ordinary shares have been acquired by it on behalf of persons in any Member State other than qualified investors, the offer of those ordinary shares to it is not treated under the Prospectus Directive as having been made to such persons.

We, the representatives and our and their respective affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgments and agreements.

Table of Contents

This prospectus has been prepared on the basis that any offer of shares of our common stock in any Member State will be made pursuant to an exemption under the Prospectus Directive from the requirement to publish a prospectus for offers of shares of our common stock. Accordingly any person making or intending to make an offer in that Member State of shares of our common stock which are the subject of the offering contemplated in this prospectus may only do so in circumstances in which no obligation arises for us or any of the representatives to publish a prospectus pursuant to Article 3 of the Prospectus Directive in relation to such offer. Neither we nor the representatives have authorized, nor do they authorize, the making of any offer of shares of our common stock in circumstances in which an obligation arises for us or the representatives to publish a prospectus for such offer.

For the purposes of this provision, the expression an "offer of shares of our common stock to the public" in relation to any shares of our common stock in any Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the shares of our common stock to be offered so as to enable an investor to decide to purchase or subscribe the shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (as amended) and includes any relevant implementing measure in each Member State.

The above selling restriction is in addition to any other selling restrictions set out in this section.

Hong Kong

The shares have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (a) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (b) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the shares has been or may be issued or has been or may be in the possession of any person for the purposes of issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

Israel

In the State of Israel, the shares of our common stock offered hereby may not be offered to any person or entity other than the following:

(a) a fund for joint investments in trust (i.e., mutual fund), as such term is defined in the Law for Joint Investments in Trust, 5754-1994, or a management company of such a fund;

(b) a provident fund as defined in Section 47(a)(2) of the Income Tax Ordinance of the State of Israel, or a management company of such a fund;

(c) an insurer, as defined in the Law for Oversight of Insurance Transactions, 5741-1981, a banking entity or satellite entity, as such terms are defined in the Banking Law (Licensing), 5741-1981, other than a joint services company, acting for their own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;

(d) a company that is licensed as a portfolio manager, as such term is defined in Section 8(b) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;

Table of Contents

(e) a company that is licensed as an investment advisor, as such term is defined in Section 7(c) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account;

(f) a company that is a member of the Tel Aviv Stock Exchange, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;

(g) an underwriter fulfilling the conditions of Section 56(c) of the Securities Law, 5728-1968;

(h) a venture capital fund (defined as an entity primarily involved in investments in companies which, at the time of investment, (i) are primarily engaged in research and development or manufacture of new technological products or processes and (ii) involve above average risk);

(i) an entity primarily engaged in capital markets activities in which all of the equity owners meet one or more of the above criteria; and

(j) an entity, other than an entity formed for the purpose of purchasing shares in this offering, in which the shareholders equity (including pursuant to foreign accounting rules, international accounting regulations and U.S. generally accepted accounting rules, as defined in the Securities Law Regulations (Preparation of Annual Financial Statements), 1993) is in excess of NIS 50 million.

Any offeree of the shares offered hereby in the State of Israel shall be required to submit written confirmation that it falls within the scope of one of the above criteria. This prospectus will not be distributed or directed to investors in the State of Israel who do not fall within one of the above criteria.

Japan

The shares of common stock have not been and will not be registered under the Financial Instruments and Exchange Law of Japan (the Financial Instruments and Exchange Law) and each underwriter has agreed that it 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 a resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the Financial Instruments and Exchange Law and any other applicable laws, regulations and ministerial guidelines of Japan.

New Zealand

This prospectus has not been registered with the office of the Registrar of Companies in New Zealand and is not a registered prospectus or investment statement for the purposes of New Zealand law.

The provision of this prospectus to any person in New Zealand does not constitute an offer of the shares of our common stock to that person or an invitation to that person to subscribe for the shares of our common stock other than (i) to any or all of the following persons only (A) to persons whose principal business is the investment of money or who, in the course of and for the purposes of their business, habitually invest money, and/or (B) persons who are each required to pay a minimum subscription price of at least NZ$500,000 for the shares of our common stock, and/or (C) any other person who in all the circumstances can properly be regarded as having been selected other than as members of the public; or (ii) to eligible persons only in accordance with section 5(2CB) of the Securities Act 1978 (New Zealand).

No investor shall subscribe for, offer, sell or deliver any shares of our common stock or distribute this prospectus or any advertisement relating to the shares of our common stock in breach of the Securities Act 1978 and, in particular, no investor shall offer for sale shares of our common stock to any member of the public in

Table of Contents

New Zealand in breach of the Securities Act 1978. By subscribing for the shares of our common stock, each investor: (a) warrants it is a person described in paragraph (i) or (ii) above and (b) undertakes to comply with the above selling restrictions.

Qatar

Without the approval of the Qatar Financial Markets Authority (the "QFMA"), the shares of common stock will not be provided, promoted, offered, sold or delivered, at any time, directly or indirectly in the State of Qatar to any person.

If the approval of the QFMA is obtained, the offer of the shares of common stock in the State of Qatar will only be made through a private placement on an exclusive basis to the specifically intended professional and sophisticated identified recipient thereof, upon that person's request and initiative, for personal use only and will not be provided, promoted, offered, sold or delivered, at any time, directly or indirectly in the State of Qatar to any other person. Such an offer shall in no way be construed as a general public offer for the sale of securities to the public or an attempt to do business as a bank, an investment company or otherwise in the State of Qatar. Such promotion will not be approved by the Qatar Central Bank and will not be registered or licensed by any other regulator in the State of Qatar including the Qatar Financial Centre Regulatory Authority and the Qatar Exchange. If provided in the State of Qatar in accordance with the foregoing restrictions, the information contained in this prospectus shall be for the recipient only and may not be shared with any third party in Qatar. It shall not be for general circulation in the State of Qatar and any distribution or reproduction of this prospectus by any recipient to third parties in Qatar is not permitted and shall be at the liability of such recipient only and no liability whatsoever shall apply to Juno Therapeutics, Inc. or the underwriters in this regard.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor 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, in each case subject to compliance with conditions set forth in the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; 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 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;

Table of Contents

- 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 shares of common stock may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or SIX, or on any other stock exchange or regulated trading facility in Switzerland. This document 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 document nor any other offering or marketing material relating to the shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, us or the shares of common stock have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA (FINMA), and any offers of shares of common stock have not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or CISA. The investor protection afforded to acquirers of w interests in collective investment schemes under the CISA does not extend to acquirers of shares.

United Kingdom

Each underwriter has represented and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 ("FSMA") received by it in connection with the issue or sale of the shares of our common stock in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares of our common stock in, from or otherwise involving the United Kingdom.

Table of Contents

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Wilson Sonsini Goodrich & Rosati, Professional Corporation, Seattle, Washington. Davis Polk & Wardwell LLP, Menlo Park, California, is representing the underwriters. Investment funds associated with Wilson Sonsini Goodrich & Rosati, Professional Corporation, hold an aggregate of 11,681 shares of our common stock, which represents less than 1% of our outstanding shares of common stock.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2016, and the effectiveness of our internal control over financial reporting as of December 31, 2016, as set forth in their reports, which are incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's reports, given on their authority as experts in accounting and auditing.

INFORMATION INCORPORATED BY REFERENCE

We "incorporate by reference" certain documents we file with the SEC, which means that we are disclosing important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus, and any information contained in this prospectus or in any document incorporated by reference in this prospectus will be deemed to be modified or superseded to the extent that a statement contained in this prospectus or free writing prospectus provided to you in connection with this offering, or in any other document we subsequently file with the SEC that also is incorporated by reference in this prospectus, modifies or supersedes the original statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to be a part of this prospectus.

The following documents filed with the SEC are hereby incorporated by reference in this prospectus:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the SEC on March 1, 2017, including portions of our proxy statement from our 2016 Annual Meeting of Stockholders held on June 15, 2017 to the extent incorporated by reference into such Annual Report on Form 10-K;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017 and June 30, 2017, filed with the SEC on May 4, 2017 and August 3, 2017, respectively;
- our Current Reports on Form 8-K filed with the SEC on April 19, 2017, May 25, 2017 and June 20, 2017; and
- the description of our common stock as set forth in our registration statement on Form 8-A (File No. 001-36781), filed with the SEC on December 10, 2014, pursuant to Section 12(b) of the Exchange Act, including any subsequent amendments or reports filed for the purpose of updating such description.

All reports and other documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act after the date of this prospectus and prior to the termination of this offering shall be deemed to be incorporated by reference in this prospectus and to be part hereof from the date of filing of such reports and other documents.

Notwithstanding the statements in the preceding paragraphs, no document, report or exhibit (or portion of any of the foregoing) or any other information that we have "furnished" or may in the future "furnish" to the SEC pursuant to the Exchange Act shall be incorporated by reference into this prospectus.

Table of Contents

We hereby undertake to provide without charge to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon written or oral request of any such person, a copy of any and all of the information that has been or may be incorporated by reference in this prospectus, other than exhibits to such documents, unless such exhibits have been specifically incorporated by reference thereto. Requests for such copies should be directed to our Investor Relations department, at the following address:

Juno Therapeutics, Inc.
400 Dexter Avenue North, Suite 1200
Seattle, WA 98109
(206) 582-1600

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly, current and special reports and other information with the SEC. You may read and copy and documents we file at the SEC's Public Reference Room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information about the public reference room. The SEC also maintains an Internet web site that contains reports, proxy and information statements and other information regarding registrants like us that file electronically with the SEC. The address of the site is www.sec.gov.

Our Internet address is www.junotherapeutics.com. We make available free of charge, on or through the investor relations section of our website, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements, and amendments to those reports filed or furnished pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Any internet addresses provided in this prospectus are for information only and are not intended to be hyperlinks. In addition, the information on or available through our website is not a part of, and is not incorporated or deemed to be incorporated by reference in, this prospectus or any free writing prospectus.

You should rely only on the information contained or incorporated by reference in this prospectus or any free writing prospectus provided in connection with this offering. We have not authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus or any free writing prospectus provided in connection with this offering. The shares of common stock offered under this prospectus are offered only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or any sale of the common stock.

This prospectus constitutes a part of a registration statement we filed with the SEC under the Securities Act of 1933, as amended. This prospectus does not contain all of the information set forth in the registration statement, certain parts of which are omitted in accordance with the rules and regulations of the SEC. For further information with respect to us and the shares of our common stock, reference is hereby made to the registration statement. The registration statement may be inspected at the public reference facilities maintained by the SEC at the addresses set forth above. Statements contained herein concerning any document filed as an exhibit are not necessarily complete, and, in each instance, reference is made to the copy of such document filed as an exhibit to the registration statement. Each such statement is qualified in its entirety by such reference.