UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the quarterly period ended June 30, 2019

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from _____ to _____.

Commission File Number 001-37998

JOUNCE THERAPEUTICS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**45-4870634**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
780 Memorial Drive Cambridge, Massachusetts	**02139**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (857) 259-3840

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.001 par value per share	JNCE	The Nasdaq Stock Market LLC

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	Smaller reporting company	☒
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of August 2, 2019, there were 32,981,637 shares of common stock, $0.001 par value per share, outstanding.

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References to Jounce

Throughout this Quarterly Report on Form 10-Q, the "Company," "Jounce," "Jounce Therapeutics," "we," "us," and "our," except where the context requires otherwise, refers to Jounce Therapeutics, Inc. and its consolidated subsidiary, and "board of directors" refers to the board of directors of Jounce Therapeutics, Inc.

Cautionary Note Regarding Forward-Looking Statements and Industry Data

This Quarterly Report on Form 10-Q contains forward-looking statements that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans, objectives of management and expected market growth, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "would", "will," "target", "goal", "could," "should, "potential," "continue" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, among other things, statements about:

- the timing, progress, and results of preclinical studies and clinical trials for our current and future product candidates, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available, and our research and development programs;
- the timing, scope, or likelihood of regulatory filings and approvals, including, as applicable, timing of our investigational new drug application for, biologics license application filing for, and final Food and Drug Administration approval of our current and future product candidates;
- our ability to use our Translational Science Platform to identify targets for future product candidates and to match immunotherapies to select patient subsets;
- our ability to identify, develop and advance future product candidates into, and successfully complete, clinical studies;
- our ability to develop combination therapies, whether on our own or in collaboration with third parties, for our current and future product candidates;
- our expectations regarding the size of the patient populations for our product candidates, if approved for commercial use, and any product candidates we may develop;
- our commercialization and marketing capabilities and strategy;
- the pricing and reimbursement of our current and future product candidates, if approved;
- the implementation of our business model and our strategic plans for our business, our current and future product candidates, and our technology;
- our ability to develop and commercialize a companion diagnostic or complementary diagnostic for our current and future product candidates;
- the rate and degree of market acceptance and clinical utility of our current and future product candidates;
- the potential benefits of our exclusive license of JTX-8064 to Celgene;
- our ability to establish or maintain future collaborations or strategic relationships or obtain additional funding;
- our ability to retain the continued service of our key professionals and to identify, hire and retain additional qualified professionals;
- our intellectual property position, including the scope of protection we are able to establish and maintain for intellectual property rights covering our current and future product candidates, and our ability not to infringe, misappropriate or otherwise violate any third-party intellectual property rights;
- our competitive position, and developments and projections relating to our competitors and our industry;

- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing; and
- the impact of laws and regulations.

There are a number of important risks and uncertainties that could cause our actual results to differ materially from those indicated by forward-looking statements. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this Quarterly Report on Form 10-Q, particularly in the section entitled “Risk Factors” in Part II, Item 1A that could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments that we may make.

You should read this Quarterly Report on Form 10-Q and the documents that we have filed as exhibits to this Quarterly Report on Form 10-Q completely and with the understanding that our actual future results may be materially different from what we expect. The forward-looking statements contained in this Quarterly Report on Form 10-Q are made as of the date of this Quarterly Report on Form 10-Q, and we do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law.

This Quarterly Report on Form 10-Q may include industry and market data, which we may obtain from our own internal estimates and research, as well as from industry and general publications and research, surveys, and studies conducted by third parties. Industry publications, studies, and surveys generally state that they have been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe that such studies and publications are reliable, we have not independently verified market and industry data from third-party sources.

Website and Social Media Disclosure

From time to time, we may use our website (www.jouncetx.com), investor and media relations website (http://ir.jouncetx.com), Facebook page (https://www.facebook.com/jouncetx), LinkedIn page (https://www.linkedin.com/company/3494537/) and Twitter feed (https://twitter.com/JounceTx) as channels for the distribution of information. The information we post through these channels may be deemed material. Accordingly, investors should monitor these channels, in addition to following our press releases, Securities and Exchange Commission filings and public conference calls and webcasts. The contents of our website and social media channels are not, however, a part of this report.

PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

Jounce Therapeutics, Inc.
Condensed Consolidated Balance Sheets (unaudited)
(amounts in thousands, except par value amounts)

	June 30, 2019	December 31, 2018
Assets:		
Current assets:		
Cash and cash equivalents	$ 37,994	$ 47,906
Short-term investments	114,026	141,968
Prepaid expenses and other current assets	5,328	2,335
Total current assets	157,348	192,209
Property and equipment, net	12,148	13,540
Long-term investments	—	5,990
Operating lease right-of-use asset	18,911	—
Other non-current assets	2,197	2,713
Total assets	$ 190,604	$ 214,452
Liabilities and stockholders' equity:		
Current liabilities:		
Accounts payable	$ 2,596	$ 3,272
Accrued expenses	7,344	6,952
Deferred revenue, current—related party	64,879	55,157
Operating lease liability, current	2,729	—
Other current liabilities	47	165
Total current liabilities	77,595	65,546
Deferred revenue, net of current portion—related party	4,566	42,715
Operating lease liability, net of current portion	18,379	—
Other non-current liabilities	—	2,062
Total liabilities	100,540	110,323
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.001 par value: 5,000 shares authorized at June 30, 2019 and December 31, 2018; no shares issued or outstanding at June 30, 2019 or December 31, 2018	—	—
Common stock, $0.001 par value: 160,000 shares authorized at June 30, 2019 and December 31, 2018; 32,981 and 32,948 shares issued at June 30, 2019 and December 31, 2018, respectively; 32,978 and 32,941 shares outstanding at June 30, 2019 and December 31, 2018, respectively	33	33
Additional paid-in capital	273,248	268,081
Accumulated other comprehensive income (loss)	135	(78)
Accumulated deficit	(183,352)	(163,907)
Total stockholders' equity	90,064	104,129
Total liabilities and stockholders' equity	$ 190,604	$ 214,452

The accompanying notes are an integral part of these condensed consolidated financial statements.

Jounce Therapeutics, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss (unaudited)
(amounts in thousands, except per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Revenue:				
Collaboration revenue—related party	$ 17,446	$ 19,378	$ 28,427	$ 30,573
Operating expenses:				
Research and development	18,130	18,495	35,410	36,657
General and administrative	7,323	6,523	14,515	13,325
Total operating expenses	25,453	25,018	49,925	49,982
Operating loss	(8,007)	(5,640)	(21,498)	(19,409)
Other income, net	1,026	966	2,152	1,707
Loss before provision for income taxes	(6,981)	(4,674)	(19,346)	(17,702)
Provision for income taxes	12	—	24	—
Net loss	$ (6,993)	$ (4,674)	$ (19,370)	$ (17,702)
Net loss per share, basic and diluted	$ (0.21)	$ (0.14)	$ (0.59)	$ (0.55)
Weighted-average common shares outstanding, basic and diluted	32,973	32,497	32,966	32,435
Comprehensive loss:				
Net loss	$ (6,993)	$ (4,674)	$ (19,370)	$ (17,702)
Other comprehensive income:				
Unrealized gain on available-for-sale securities	84	135	213	193
Comprehensive loss	$ (6,909)	$ (4,539)	$ (19,157)	$ (17,509)

The accompanying notes are an integral part of these condensed consolidated financial statements.

Jounce Therapeutics, Inc.
Condensed Consolidated Statements of Stockholders' Equity (unaudited)
(amounts in thousands)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive (Loss) Income	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2018	32,941	$ 33	$ 268,081	$ (78)	$ (163,907)	$ 104,129
Exercises of common stock options	24	—	69	—	—	69
Vesting of restricted common stock	2	—	7	—	—	7
Stock-based compensation expense	—	—	2,542	—	—	2,542
Other comprehensive income	—	—	—	129	—	129
Cumulative effect adjustment upon adoption of ASC 842	—	—	—	—	(75)	(75)
Net loss	—	—	—	—	(12,377)	(12,377)
Balance at March 31, 2019	32,967	$ 33	270,699	51	(176,359)	94,424
Exercises of common stock options	9	—	29	—	—	29
Vesting of restricted common stock	2	—	7	—	—	7
Stock-based compensation expense	—	—	2,513	—	—	2,513
Other comprehensive income	—	—	—	84	—	84
Net loss	—	—	—	—	(6,993)	(6,993)
Balance at June 30, 2019	32,978	$ 33	$ 273,248	$ 135	$ (183,352)	$ 90,064

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2017	32,249	$ 32	$ 257,101	$ (409)	$ (89,615)	$ 167,109
Exercise of common stock options	198	—	784	—	—	784
Vesting of restricted common stock	4	—	8	—	—	8
Stock-based compensation expense	—	—	2,268	—	—	2,268
Other comprehensive income	—	—	—	58	—	58
Cumulative effect adjustment upon adoption of ASC 606	—	—	—	—	(46,913)	(46,913)
Net loss	—	—	—	—	(13,028)	(13,028)
Balance at March 31, 2018	32,451	32	260,161	(351)	(149,556)	110,286
Exercises of common stock options	143	1	380	—	—	381
Vesting of restricted common stock	2	—	7		—	7
Stock-based compensation expense	—	—	2,360	—	—	2,360
Other comprehensive income	—	—	—	135	—	135
Net loss	—	—	—	—	(4,674)	(4,674)
Balance at June 30, 2018	32,596	$ 33	$ 262,908	$ (216)	$ (154,230)	$ 108,495

The accompanying notes are an integral part of these condensed consolidated financial statements.

Jounce Therapeutics, Inc.
Condensed Consolidated Statements of Cash Flows (unaudited)
(amounts in thousands)

	Six Months Ended June 30,	
	2019	**2018**
Operating activities:		
Net loss	$ (19,370)	$ (17,702)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	5,055	4,628
Depreciation expense	1,923	1,908
Net amortization of premiums and discounts on investments	(883)	(138)
Changes in operating assets and liabilities:		
Taxes receivable	—	16,737
Prepaid expenses and other current assets	(1,849)	589
Other non-current assets	(628)	31
Accounts payable	(645)	201
Accrued expenses and other current liabilities	335	(1,421)
Deferred revenue—related party	(28,427)	(30,573)
Other liabilities	13	63
Net cash used in operating activities	(44,476)	(25,677)
Investing activities:		
Purchases of investments	(89,480)	(127,889)
Proceeds from maturities of investments	124,508	175,913
Proceeds from sales of investments	—	3,997
Purchases of property and equipment	(562)	(959)
Net cash provided by investing activities	34,466	51,062
Financing activities:		
Proceeds from exercise of stock options	98	1,165
Net cash provided by financing activities	98	1,165
Net (decrease) increase in cash, cash equivalents and restricted cash	(9,912)	26,550
Cash, cash equivalents and restricted cash, beginning of period	49,176	24,829
Cash, cash equivalents and restricted cash, end of period	$ 39,264	$ 51,379
Non-cash investing and financing activities:		
Purchases of property and equipment in accounts payable and accrued expenses	$ —	$ 110
Supplemental cash flow information:		
Cash paid for lease liabilities	$ 2,130	$ —
Cash paid for income taxes	$ 101	$ —

The accompanying notes are an integral part of these condensed consolidated financial statements.

Jounce Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements
(unaudited)

1. Nature of Business

Jounce Therapeutics, Inc. (the "Company") is a clinical-stage immunotherapy company dedicated to transforming the treatment of cancer by developing therapies that enable the immune system to attack tumors and provide long-lasting benefits to patients. The Company is subject to a number of risks similar to those of other clinical-stage immunotherapy companies, including dependence on key individuals; the need to develop commercially viable products; competition from other companies, many of which are larger and better capitalized; and the need to obtain adequate additional financing to fund the development of its products.

As of June 30, 2019, the Company had cash, cash equivalents and investments of $152.0 million. The Company expects that its existing cash, cash equivalents and investments will enable it to fund its expected operating expenses and capital expenditure requirements for at least 12 months from August 7, 2019, the filing date of this Quarterly Report on Form 10-Q. The Company expects to finance its future cash needs through a combination of equity or debt financings, collaborations, licensing arrangements and strategic alliances.

2. Basis of Presentation and Summary of Significant Accounting Policies

Basis of Presentation and Consolidation

The accompanying condensed consolidated financial statements as of June 30, 2019 and December 31, 2018, and for the three and six months ended June 30, 2019 and 2018, have been prepared in accordance with the rules and regulations of the Securities and Exchange Commission (the "SEC") and generally accepted accounting principles in the United States of America ("GAAP") as found in the Accounting Standards Codification ("ASC") of the Financial Accounting Standards Board ("FASB") for condensed consolidated financial information. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements. In the opinion of management, these condensed consolidated financial statements reflect all normal recurring adjustments which are necessary for a fair presentation of the Company's financial position and results of its operations, as of and for the periods presented. These condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and notes thereto contained in the Company's Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on March 6, 2019 (the "Annual Report on Form 10-K").

The information presented in the condensed consolidated financial statements and related notes as of June 30, 2019, and for the three and six months ended June 30, 2019 and 2018, is unaudited. The December 31, 2018 condensed consolidated balance sheet included herein was derived from the audited financial statements as of that date, but does not include all disclosures, including notes, required by GAAP for complete financial statements.

Interim results for the six months ended June 30, 2019 are not necessarily indicative of the results that may be expected for the fiscal year ending December 31, 2019, or any future period.

The accompanying condensed consolidated financial statements include the accounts of Jounce Therapeutics, Inc. and its wholly-owned subsidiary, Jounce Mass Securities, Inc. All intercompany transactions and balances have been eliminated in consolidation.

Summary of Significant Accounting Policies

The significant accounting policies and estimates used in the preparation of the condensed consolidated financial statements are described in the Company's audited financial statements as of and for the year ended December 31, 2018, and the notes thereto, which are included in the Annual Report on Form 10-K. There have been no material changes in the Company's significant accounting policies during the six months ended June 30, 2019, except as discussed below with respect to the adoption of ASC Topic 842, *Leases* ("ASC 842").

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, the Company's management evaluates its estimates which include, but are not limited to, estimates related to revenue recognized under the Master Research and Collaboration Agreement (the "Celgene Collaboration Agreement") with Celgene Corporation ("Celgene") (including estimates of internal and external costs expected to be incurred to satisfy performance obligations), the determination of the discount rate utilized in the initial application of ASC 842, accrued expenses, stock-based compensation expense and income taxes. The Company bases its estimates on historical experience and other market specific or other relevant assumptions it believes to be reasonable under the circumstances. Actual results could differ from those estimates.

Recent Accounting Pronouncements

In February 2016, the FASB issued Accounting Standards Update ("ASU") 2016-02, *Leases (Topic 842)*, which requires a lessee to recognize assets and liabilities on the balance sheet for operating leases and changes many key definitions, including the definition of a lease. The new standard includes a short-term lease exception for leases with a term of 12 months or less, as part of which a lessee can make an accounting policy election not to recognize lease assets and lease liabilities. Lessees will continue to differentiate between finance leases (previously referred to as capital leases) and operating leases using classification criteria that are substantially similar to the previous guidance. In July 2018, the FASB also issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which permits entities to continue applying legacy guidance in ASC Topic 840, *Leases* ("ASC 840"), including its disclosure requirements, in the comparative periods presented in the year that the entity adopts the new leasing standard. Under this transition method, the cumulative effect of initially applying ASC 842 is recognized as an adjustment to the opening balance of retained earnings or accumulated deficit at the beginning of the annual reporting period that includes the date of initial application. The new standard became effective for annual reporting periods beginning after December 15, 2018, including interim periods within those annual reporting periods.

Accordingly, the Company adopted ASC 842 on January 1, 2019 using the transition method permitted by ASU 2018-11. In adopting ASC 842, the Company elected to utilize a package of practical expedients under which an entity need not reassess whether any expired or existing contracts are or contain leases, the lease classification for any expired or existing leases or initial direct costs for any existing leases. The Company also elected a practical expedient whereby an entity can utilize hindsight in determining the lease term, including options to extend or terminate the lease. Finally, the Company elected a practical expedient related to not separating lease and nonlease components. In addition, as discussed above, an entity may elect an accounting policy whereby it does not apply the recognition requirements of ASC 842 to short-term leases with a term of 12 months or less. Under this accounting policy, an entity does not recognize a right-of-use asset or lease liability on its balance sheet and instead recognizes lease payments as an expense on a straight-line basis over the lease term. The Company has elected this short-term lease accounting policy.

Upon the adoption of ASC 842, the Company removed its legacy deferred rent balances that were previously recorded under ASC 840 and established an operating lease right-of-use asset of $20.2 million, an operating lease liability, current of $2.6 million and an operating lease liability, net of current portion of $19.8 million, all relating to the Company's existing operating lease for its current corporate headquarters. The Company also recorded an increase to the opening balance of accumulated deficit of less than $0.1 million as a result of the adoption of ASC 842. The following table presents a summary of the amount by which each financial statement line item was affected by the adoption of ASC 842 (in thousands):

	January 1, 2019		
	Prior to the Adoption of ASC 842	Effect of Adoption	Subsequent to the Adoption of ASC 842
Operating lease right of use asset	$ —	$ 20,156	$ 20,156
Operating lease liability, current	$ —	$ 2,563	$ 2,563
Other current liabilities	$ 165	$ (61)	$ 104
Operating lease liability, net of current portion	$ —	$ 19,790	$ 19,790
Other non-current liabilities	$ 2,062	$ (2,062)	$ —
Accumulated deficit	$ (163,907)	$ (75)	$ (163,982)

The adoption of ASC 842 did not have a material impact on the condensed consolidated statement of operations and comprehensive loss or the condensed consolidated statement of cash flows for the three and six months ended June 30, 2019.

The Company subsequently measures its lease liability at the present value of remaining lease payments, discounted using the discount rate for the lease. The right-of-use asset is subsequently measured at the amount of the lease liability, adjusted for prepaid or accrued lease payments and the remaining balance of lease incentives received. The Company recognizes operating lease expense on a straight-line basis over the lease term. See Note 11, “Corporate Headquarters Lease”, for further information on the application of ASC 842 to the Company’s operating lease for its current corporate headquarters.

In June 2016, the FASB issued ASU 2016-13, F*inancial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. This standard requires that credit losses be reported using an expected losses model rather than the incurred losses model that is currently used, and it establishes additional disclosure requirements related to credit risks. For available-for-sale debt securities with unrealized losses, this standard now requires allowances to be recorded instead of reducing the amortized cost of the investment. This guidance will be effective for annual reporting periods beginning after December 15, 2019, including interim periods within those annual reporting periods, and early adoption is permitted. The Company is currently evaluating the potential impact that ASU 2016-13 may have on the condensed consolidated financial statements.

In June 2018, the FASB issued ASU 2018-07, *Compensation—Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*. This guidance is intended to simplify the accounting for share-based payments to nonemployees by aligning it with the accounting for share-based payments to employees, with certain exceptions. This guidance became effective for annual reporting periods beginning after December 15, 2018, including interim periods within those annual reporting periods. Accordingly, the Company adopted ASU 2018-07 effective January 1, 2019, and there was no impact to the condensed consolidated financial statements as a result of the adoption of this guidance.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement,* which eliminates, adds and modifies certain disclosure requirements for fair value measurements. This guidance will be effective for annual reporting periods beginning after December 15, 2019, including interim periods within those annual reporting periods, and early adoption is permitted. More specifically, an entity is permitted to early adopt any removed or modified disclosure requirements immediately and delay adoption of additional disclosure requirements until the effective date of this guidance. The Company does not anticipate a material impact to the condensed consolidated financial statements as a result of the adoption of this guidance.

In November 2018, the FASB issued ASU 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606*, which clarifies that certain transactions between participants in a collaborative arrangement should be accounted for under ASC Topic 606, *Revenue from Contracts with Customers* (“ASC 606”) when the counterparty is a customer. In addition, ASU 2018-18 adds unit-of-account guidance to ASC Topic 808, *Collaborative Arrangements*, in order to align this guidance with ASC 606 and also precludes an entity from presenting consideration from a transaction in a collaborative arrangement as revenue from contracts with customers if the counterparty is not a customer for that transaction. This guidance will be effective for annual reporting periods beginning after December 15, 2019, including interim periods within those annual reporting periods, and early adoption is permitted. The Company is currently evaluating the potential impact that ASU 2018-18 may have on the condensed consolidated financial statements.

3. Celgene Collaboration Agreement

In July 2016, the Company entered into the Celgene Collaboration Agreement. The primary goal of the collaboration is to co-develop and co-commercialize innovative biologic immunotherapies that either activate or suppress the immune system by binding to targets identified by leveraging the Company’s Translational Science Platform. Under the Celgene Collaboration Agreement, the Company granted Celgene exclusive options to develop and commercialize the Company’s lead product candidate, vopratelimab, and up to four early-stage programs, consisting of targets to be selected from a pool of certain B cell, T regulatory cell and tumor-associated macrophage targets. Additionally, the Company granted Celgene an exclusive option to develop and commercialize the Company’s product candidate JTX-4014, an anti-PD-1 antibody, which, upon exercise of such option, will be a shared program that may be used by both parties in and outside of the collaboration. The Celgene Collaboration Agreement was subsequently terminated effective July 22, 2019, as outlined further in Note 13, “Subsequent Events”.

The Company received a non-refundable upfront cash payment of $225.0 million in July 2016 upon the execution of the Celgene Collaboration Agreement. The Company also received $36.1 million from the sale of 10,448,100 shares of Series B-1 convertible preferred stock upon the execution of a Series B-1 Preferred Stock Purchase Agreement

with Celgene, which shares converted into 2,831,463 shares of common stock upon the completion of the Company's initial public offering ("IPO"). If Celgene elects to exercise any of the program options, Celgene will pay the Company an option-exercise fee of $10.0 million to $60.0 million that varies by program, with an aggregate of $182.5 million if Celgene exercises all six program options. The initial research term of the collaboration is four years, which can be extended, at Celgene's option, annually for up to three additional years for additional consideration that ranges from $30.0 million to $45.0 million per year, for an aggregate of $120.0 million if the term is extended for an additional three years.

Worldwide Development Cost and U.S. Operating Profit and Loss Sharing

Prior to Celgene exercising any of its options, the Company is responsible for all research and development activities under the Celgene Collaboration Agreement. Upon the exercise of each program option, the parties will enter into a co-development and co-commercialization agreement ("Co-Co Agreements") or, in the case of JTX-4014, a license agreement ("JTX-4014 License Agreement") that governs the development and commercialization of the applicable program. Although the agreements will not be executed unless and until Celgene exercises an option, the parties have agreed to the terms of the Co-Co Agreements and the JTX-4014 License Agreement as part of the Celgene Collaboration Agreement.

Under the Co-Co Agreements and the JTX-4014 License Agreement, the Company will share with Celgene the U.S. profits or losses and development costs on such collaboration program as follows:

- The Company will retain 60 percent of the U.S. operating profits or losses arising from commercialization of vopratelimab, with 40 percent allocated to Celgene.
- The Company will retain 25 percent of the U.S. operating profits or losses arising from commercialization of the first program (the "Lead Program"), other than vopratelimab or JTX-4014, for which an investigational new drug application ("IND") is filed under the collaboration, with 75 percent allocated to Celgene. Celgene has a one-time right to substitute and swap the economics and governance of this program with that of another program for which it exercises an option (other than vopratelimab and JTX-4014).
- The Company and Celgene will equally share U.S. operating profits or losses arising from commercialization of up to three additional programs (other than vopratelimab, JTX-4014 or the Lead Program) (the "Other Programs").
- The Company and Celgene will share all development costs, other than for JTX-4014, in accordance with the applicable Co-Co Agreements, of which Celgene's portion of the costs range from 67 percent to 85 percent.

If Celgene exercises its option for a program other than JTX-4014, the Company will enter into a Co-Co Agreement, pursuant to which Celgene will have the exclusive right to develop and commercialize the products arising out of such collaboration program outside of the United States, and the Company will be eligible to receive tiered royalties ranging from a high single digit to mid-teen percentage rate on net product sales outside of the United States. Under each Co-Co Agreement, the Company will also have the right to opt out of profit sharing and instead receive milestones and royalties.

Furthermore, if Celgene exercises its option for JTX-4014, the Company will enter into the JTX-4014 License Agreement, pursuant to which Celgene and the Company will each have equal rights to develop and commercialize JTX-4014 in combination with other proprietary molecules in their or the Company's respective pipelines or in combination with products arising out of collaboration programs. Subject to terms specified in the license agreement for JTX-4014, the party owning the proprietary molecule that is combined with JTX-4014, if such molecule does not arise from a collaboration program with Celgene, will be solely responsible for all development and commercialization costs related to such combination. If JTX-4014 is combined with a product arising from a collaboration program, then the parties will share costs and, if co-packaged or co-formulated, profits or losses in accordance with the Co-Co Agreements for such other product.

Milestones and Royalties

Under the Co-Co Agreements and the JTX-4014 License Agreement, Celgene is required to pay the Company for specified development, regulatory and commercial milestones, if achieved, up to approximately $2.3 billion, across all collaboration programs. The development milestones are payable on initiation of certain clinical trials and range from $32.5 million to $105.0 million, per program, with an aggregate total of $290.0 million. The regulatory approval milestones are payable upon regulatory approval in the United States and outside the United States and range from $7.5 million to $50.0 million per milestone, with an aggregate total of $700.0 million. The commercial milestones are payable upon achievement of specified aggregate product sales outside the United States for each program and range from $40.0 million to $200.0 million per milestone, with an aggregate total of $1.270 billion. The Company is also eligible to receive royalties on product sales outside the United States ranging from high single digit to mid-teen royalties.

Exercise of Options

Celgene may exercise its option for a program at any time until the expiration of an option term for that program. For each program, the option term ends 45 to 60 days following Celgene's receipt of a data package that includes certain information relating to the program's research and development activities. The data package for a program may be delivered to Celgene after the applicable development milestone for such program has been achieved. Depending on the program, the applicable development milestone is (i) IND acceptance, (ii) availability of certain Phase 1a data or (iii) availability of certain Phase 1/2 data. If Celgene fails to exercise its option during the option term for a program, the Company will continue to retain all rights to such program. If Celgene exercises its option for a program other than JTX-4014, then the Company will enter into a Co-Co Agreement with Celgene for such program in substantially the form attached to the agreement as an exhibit.

Under the Co-Co Agreement for vopratelimab and one additional program for which Celgene opts in, other than JTX-4014, the Company will be responsible for leading development and commercialization activities in the United States and Celgene will be responsible for development and commercialization activities outside the United States. For all other additional programs for which Celgene opts in, other than JTX-4014, Celgene will lead development and commercialization activities worldwide.

If Celgene exercises its option for JTX-4014, the Company and Celgene will enter into a license agreement, in substantially the form attached to the agreement as an exhibit, pursuant to which the Company and Celgene will both be able to equally access JTX-4014 for combinations within each other's portfolios and with other molecules that are subject to the agreement, subject to joint governance. Once Celgene opts in with respect to a given program, Celgene and the Company must each use commercially reasonable efforts to develop and commercialize the corresponding product in the United States.

Termination

At any point during the Celgene Collaboration Agreement, including during the research, development and clinical trial process, or during the term of the applicable co-development and co-commercialization or license agreement, respectively, Celgene can terminate the applicable agreement with the Company in its entirety, or with respect to any program under the Celgene Collaboration Agreement, upon 120 days' notice and can terminate the entire agreement with the Company in connection with a material breach of the agreement by the Company that remains uncured for 90 days.

Exclusivity

During the Celgene Collaboration Agreement's research term (i.e., for four years plus up to three one-year extensions that Celgene may elect), the Company may not alone, or with a third party, research, develop, manufacture or commercialize a biologic that binds to ICOS or a defined pool of B cell, T regulatory cell or tumor-associated macrophage targets that meet certain criteria, each termed a "Collaboration Exclusive Target", and inhibit, activate or otherwise modulate the activity of such Collaboration Exclusive Target. In addition, if Celgene exercises its option for a program within the Celgene Collaboration Agreement, other than JTX-4014, then until termination or expiration of the applicable Co-Co Agreement for such program, the Company may not directly or indirectly research, develop, manufacture or commercialize, outside of the Celgene Collaboration Agreement, any biologic with specified activity against that program's Collaboration Exclusive Target.

Accounting Analysis under ASC 606

Identification of the Contract(s)

The Company assessed the Celgene Collaboration Agreement and concluded that it represents a contract with a customer within the scope of ASC 606. The Company also concluded that each of the Co-Co Agreements and the JTX-4014 License Agreement, if executed in the future, would represent separate contracts apart from the Celgene Collaboration Agreement.

Identification of Promises and Performance Obligations

The Company determined that the Celgene Collaboration Agreement contains the following promises: (i) research and development services for the product candidate, vopratelimab ("Vopratelimab Research Services") (ii) research and development services for the product candidate, JTX-4014 ("JTX-4014 Research Services") (iii) research and development services associated with the Lead Program and Other Programs ("Lead and Other Programs Research Services"), (iv) research services associated with target screening ("Target Screening Services"), (v) non-transferable, limited sub-licensable and non-exclusive licenses to use the Company's intellectual property and the Company's rights in the collaboration intellectual property to conduct certain activities, on a program-by-program basis (the "Research Licenses"), (vi) various record-keeping and reporting requirements on a program-by-program basis, (vii) exclusivity provisions with respect to each Collaboration Exclusive Target and biologics binding to such Collaboration Exclusive Targets and (viii) establishment of and participation in a joint steering committee (the "JSC") and a joint patent committee (the "JPC"). The Company also evaluated the six program options as well as the research term extension options and concluded that none convey a material right to Celgene. Accordingly, neither the program options nor the research term extension options are considered to be promises within the Celgene Collaboration Agreement.

The Company assessed the above promises and concluded that each of the Vopratelimab Research Services, JTX-4014 Research Services, Lead and Other Programs Research Services and Target Screening Services are both capable of being distinct and distinct within the context of the Celgene Collaboration Agreement. Therefore, the Company has concluded that each of the Vopratelimab Research Services, JTX-4014 Research Services, Lead and Other Programs Research Services and Target Screening Services represent separate performance obligations.

The Company determined that the Research Licenses are not distinct within the context of the Celgene Collaboration Agreement as the Research Licenses allow Celgene to evaluate the results of the research and development services performed by the Company and the right to perform its duties under the Celgene Collaboration Agreement, but do not provide Celgene with any commercialization rights. Celgene can only benefit from the Research Licenses in conjunction with the related research and development services. Accordingly, the Research Licenses related to vopratelimab, JTX-4014 and the Lead and Other Programs have been combined with their respective research and development services performance obligations.

Similarly, the Company also determined that the various record-keeping and reporting requirements related to each program and the exclusivity provisions with respect to each Collaboration Exclusive Target and biologics binding to such Collaboration Exclusive Targets are not distinct within the context of the Celgene Collaboration Agreement. Accordingly, the various record-keeping and reporting requirements on a program-by-program basis and the exclusivity provisions with respect to each Collaboration Exclusive Target and biologics binding to such Collaboration Exclusive Targets have been combined with their respective research and development services performance obligations.

Finally, the Company assessed its participation in the JSC and the JPC and concluded that, while it does meet the definition of a performance obligation, it is both quantitatively and qualitatively immaterial in the context of the Celgene Collaboration Agreement. Accordingly, the Company has disregarded its participation in the JSC and the JPC as a performance obligation.

Determination of Transaction Price

As noted above, the Company received a non-refundable upfront cash payment of $225.0 million upon the execution of the Celgene Collaboration Agreement. This upfront payment represents an element of fixed consideration under the Celgene Collaboration Agreement. Celgene also purchased 10,448,100 shares of Series B-1 convertible preferred stock ("Series B-1 Preferred Stock") for gross proceeds of $36.1 million, which shares converted into 2,831,463 shares of common stock upon the completion of the IPO. The Company determined the shares of Series B-1 Preferred Stock were sold at fair value. Therefore, the proceeds from the issuance of Series B-1 Preferred Stock did not impact the transaction price to be allocated to the performance obligations.

The Company evaluated as possible variable consideration the milestones, royalties, development cost sharing and profit sharing provisions discussed above. The Company concluded that none of these items represent variable consideration under the Celgene Collaboration Agreement as all such amounts are dependent upon the execution of a related Co-Co Agreement or the JTX-4014 License Agreement. The Co-Co Agreements and the JTX-4014 License Agreement, if executed in the future, would represent separate contracts apart from the Celgene Collaboration Agreement.

The Company also considered the existence of any significant financing component within the Celgene Collaboration Agreement given its upfront payment structure. Based upon this assessment, the Company concluded that any difference between the promised consideration and the cash selling price of the services under the Celgene Collaboration Agreement arises for reasons other than the provision of financing, and the difference between those amounts is proportional to the reason for the difference. Accordingly, the Company has concluded that the upfront payment structure of the Celgene Collaboration Agreement does not result in the existence of a significant financing component.

Based upon the above considerations, the Company has concluded that the transaction price associated with the Celgene Collaboration Agreement consists solely of the upfront payment of $225.0 million.

Allocation of Transaction Price to Performance Obligations

The Company has allocated the transaction price to each performance obligation on a relative standalone selling price basis. For all performance obligations, the Company determined the standalone selling price using estimates of the costs to perform the research and development services, including expected internal and external costs for services and supplies, adjusted to reflect a reasonable profit margin. The total estimated cost of the research and development services reflects the nature of the services to be performed and the Company's best estimate of the length of time required to perform the services.

Recognition of Revenue

The Company recognizes revenue related to the Celgene Collaboration Agreement over time as the services related to each performance obligation are rendered. The Company has concluded that an input method under ASC 606 is a representative depiction of the transfer of services under the Celgene Collaboration Agreement. The method of measuring progress towards delivery of the services incorporates actual internal and external costs incurred, relative to total internal and external costs expected to be incurred to satisfy the performance obligations. The period over which total costs are estimated reflects the Company's estimate of the period over which it will perform the research and development services to deliver a pre-defined data package to Celgene for each program subject to an option. The Company recognizes revenue for each performance obligation over periods ranging from twelve months to four years. Changes in estimates of total internal and external costs expected to be incurred are recognized in the period of change as a cumulative catch-up adjustment.

For the three months ended June 30, 2019 and 2018, the Company recognized collaboration revenue of $17.4 million and $19.4 million, respectively, under the Celgene Collaboration Agreement related to the $225.0 million upfront payment received in 2016. For the six months ended June 30, 2019 and 2018, the Company recognized collaboration revenue of $28.4 million and $30.6 million, respectively.

As of June 30, 2019, the Company had $69.4 million of deferred revenue, which is classified as either current or net of current portion in the accompanying condensed consolidated balance sheets based on the period over which the revenue is expected to be recognized. As of June 30, 2019, prior to the termination of the Celgene Collaboration Agreement on July 22, 2019, the Company expected to recognize this revenue over the initial research term of the Celgene Collaboration Agreement. This deferred revenue balance represents the aggregate amount of the transaction price allocated to the performance obligations that are partially unsatisfied as of June 30, 2019.

The following table presents changes in the Company's contract liabilities during the six months ended June 30, 2019 (in thousands):

	Balance as of January 1, 2019	Additions	Reductions	Balance as of June 30, 2019
Contract liabilities:				
Deferred revenue	$ 97,872	$ —	$ (28,427)	$ 69,445
Totals	$ 97,872	$ —	$ (28,427)	$ 69,445

The reductions to the deferred revenue contract liability during the six months ended June 30, 2019 were comprised of revenue recognized for research and development services performed during the period, offset by a cumulative decrease of revenue previously recognized of $1.3 million arising from changes in costs estimated to be incurred under the Celgene Collaboration Agreement.

All revenue recognized during the six months ended June 30, 2019 was included within the beginning balance of the deferred revenue contract liability.

As of June 30, 2019, the Company had not received any option exercise, research term extension, milestone or royalty payments under the Celgene Collaboration Agreement.

4. Fair Value Measurements

Fair value is an exit price, representing the amount that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. Fair value is determined based on observable and unobservable inputs. Observable inputs reflect readily obtainable data from independent sources, while unobservable inputs reflect certain market assumptions. As a basis for considering such assumptions, GAAP establishes a three-tier value hierarchy, which prioritizes the inputs used to develop the assumptions and for measuring fair value as follows: (Level 1) observable inputs such as quoted prices in active markets for identical assets; (Level 2) inputs other than the quoted prices in active markets that are observable either directly or indirectly; and (Level 3) unobservable inputs in which there is little or no market data, which requires the Company to develop its own assumptions. This hierarchy requires the Company to use observable market data, when available, and to minimize the use of unobservable inputs when determining fair value.

The Company measures the fair value of money market funds, U.S. Treasuries and government agency securities based on quoted prices in active markets for identical securities. Investments also include corporate debt securities which are valued either based on recent trades of securities in inactive markets or based on quoted market prices of similar instruments and other significant inputs derived from or corroborated by observable market data.

The carrying amounts reflected in the condensed consolidated balance sheets for cash, prepaid expenses and other current assets, accounts payable and accrued expenses approximate their fair values, due to their short-term nature.

Assets measured at fair value on a recurring basis as of June 30, 2019 were as follows (in thousands):

	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds, included in cash equivalents	$ 37,994	$ 37,994	$ —	$ —
Investments:				
Corporate debt securities	32,952	—	32,952	—
U.S. Treasuries	60,300	60,300	—	—
Government agency securities	20,774	20,774	—	—
Totals	$ 152,020	$ 119,068	$ 32,952	$ —

Assets measured at fair value on a recurring basis as of December 31, 2018 were as follows (in thousands):

	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds, included in cash equivalents	$ 41,434	$ 41,434	$ —	$ —
Investments:				
Corporate debt securities	67,843	—	67,843	—
U.S. Treasuries	53,758	53,758	—	—
Government agency securities	32,829	32,829	—	—
Totals	$ 195,864	$ 128,021	$ 67,843	$ —

There were no changes in valuation techniques or transfers between the fair value measurement levels during the three and six months ended June 30, 2019 or during the year ended December 31, 2018. There were no liabilities measured at fair value on a recurring basis as of June 30, 2019 or December 31, 2018.

5. Investments

Short-term investments consist of investments with maturities greater than ninety days and less than one year from the balance sheet date. Long-term investments consist of investments with maturities of greater than one year that are not expected to be used to fund current operations. The Company classifies all of its investments as available-for-sale securities. Accordingly, these investments are recorded at fair value. Realized gains and losses, amortization and accretion of discounts and premiums are included in other income, net. Unrealized gains and losses on available-for-sale securities are included in other comprehensive income as a component of stockholders' equity until realized.

Cash equivalents and short-term investments as of June 30, 2019 were comprised as follows (in thousands):

	June 30, 2019			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Cash equivalents and short-term investments:				
Money market funds, included in cash equivalents	$ 37,994	$ —	$ —	$ 37,994
Corporate debt securities	32,937	15	—	32,952
U.S. Treasuries	60,229	72	(1)	60,300
Government agency securities	20,725	49	—	20,774
Total cash equivalents and short-term investments	$ 151,885	$ 136	$ (1)	$ 152,020

The Company maintained no long-term investments as of June 30, 2019.

Cash equivalents, short-term investments and long-term investments as of December 31, 2018 were comprised as follows (in thousands):

	December 31, 2018			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Cash equivalents and short-term investments:				
Money market funds, included in cash equivalents	$ 41,434	$ —	$ —	$ 41,434
Corporate debt securities	65,887	2	(39)	65,850
U.S. Treasuries	53,765	1	(8)	53,758
Government agency securities	28,866	—	(34)	28,832
Total cash equivalents and short-term investments	189,952	3	(81)	189,874
Long-term investments:				
Corporate debt securities	2,001	—	(8)	1,993
Government agency securities	3,989	8	—	3,997
Total long-term investments	5,990	8	(8)	5,990
Total cash equivalents and investments	$ 195,942	$ 11	$ (89)	$ 195,864

As of June 30, 2019 and December 31, 2018, the aggregate fair value of securities that were in an unrealized loss position for less than twelve months was $6.5 million and $81.4 million, respectively. As of June 30, 2019, no securities were in an unrealized loss position for more than twelve months. As of December 31, 2018, the aggregate fair value of securities that were in an unrealized loss position for more than twelve months was $22.3 million. As of June 30, 2019, the Company did not intend to sell, and would not be more likely than not required to sell, the securities in an unrealized loss position before recovery of their amortized cost bases. Furthermore, the Company determined that there was no material change in the credit risk of these securities. As a result, the Company determined it did not hold any securities with any other-than-temporary impairment as of June 30, 2019.

There were no realized gains and losses on available-for-sale securities during the three and six months ended June 30, 2019. There were immaterial realized gains and losses on available-for-sale securities during the three and six months ended June 30, 2018.

6. Restricted Cash

As of both June 30, 2019 and December 31, 2018, the Company maintained non-current restricted cash of $1.3 million. This amount is included within "Other non-current assets" in the accompanying condensed consolidated balance sheets and is comprised solely of a letter of credit required pursuant to the lease for the Company's corporate headquarters.

The following table provides a reconciliation of cash, cash equivalents and restricted cash that sums to the total of the same such amounts shown in the condensed consolidated statements of cash flows (in thousands):

	Six Months Ended June 30, 2019		Six Months Ended June 30, 2018	
	Beginning of Period	End of Period	Beginning of Period	End of Period
Cash and cash equivalents	$ 47,906	$ 37,994	$ 23,559	$ 50,109
Restricted cash	1,270	1,270	1,270	1,270
Cash, cash equivalents and restricted cash	$ 49,176	$ 39,264	$ 24,829	$ 51,379

7. Accrued Expenses

Accrued expenses as of June 30, 2019 and December 31, 2018 were comprised as follows (in thousands):

	June 30, 2019	December 31, 2018
Employee compensation and benefits	$ 3,350	$ 4,063
External research and professional services	3,757	2,796
Lab consumables and other	237	93
Total accrued expenses	$ 7,344	$ 6,952

8. Common Stock and Preferred Stock

Common Stock

The Company is authorized to issue 160,000,000 shares of common stock. Holders of common stock are entitled to one vote per share. Holders of common stock are entitled to receive dividends, if and when declared by the board of directors.

Preferred Stock

The Company is authorized to issue 5,000,000 shares of undesignated preferred stock in one or more series. As of June 30, 2019, no shares of preferred stock were issued or outstanding.

Shares Reserved for Future Issuance

As of June 30, 2019 and December 31, 2018, the Company had reserved for future issuance the following number of shares of common stock (in thousands):

	June 30, 2019	December 31, 2018
Shares reserved for vesting of restricted stock awards	4	7
Shares reserved for vesting of restricted stock units	649	371
Shares reserved for exercises of outstanding stock options	5,792	5,023
Shares reserved for future issuance under the 2017 Stock Option and Incentive Plan	1,352	1,114
Total shares reserved for future issuance	7,797	6,515

9. Stock-based Compensation

2013 Stock Option and Grant Plan

In February 2013, the board of directors adopted and the Company's stockholders approved the 2013 Stock Option and Grant Plan (the "2013 Plan"), as amended and restated, under which it could grant incentive stock options ("ISOs"), non-qualified stock options, restricted stock awards ("RSAs") and restricted stock units ("RSUs") to eligible employees, officers, directors, and consultants. The 2013 Plan was subsequently amended in January 2015, April 2015, July 2015, March 2016 and October 2016 to allow for the issuance of additional shares of common stock.

2017 Stock Option and Incentive Plan

In January 2017, the board of directors adopted and the Company's stockholders approved the 2017 Stock Option and Incentive Plan (the "2017 Plan"), which became effective immediately prior to the effectiveness of the IPO. Upon the adoption of the 2017 Plan, no further awards will be granted under the 2013 Plan.

The 2017 Plan provides for the grant of ISOs, non-qualified stock options, RSAs, RSUs, stock appreciation rights and other stock-based awards. The Company's employees, officers, directors and consultants and advisors are eligible to receive awards under the 2017 Plan. The terms of awards, including vesting requirements, are determined by the board of directors, subject to the provisions of the 2017 Plan.

The Company initially registered on Form S-8 1,753,758 shares of common stock under the 2017 Plan, which was comprised of (i) 1,510,000 shares of common stock reserved for issuance under the 2017 Plan, plus (ii) 243,758 shares of common stock originally reserved for issuance under the 2013 Plan that became available for issuance under the 2017 Plan upon the completion of the Company's IPO. The 2017 Plan also provides that an additional number of shares will automatically be added to the shares authorized for issuance under the 2017 Plan on January 1, 2018 and each January 1st thereafter. The number of shares added each year will be equal to the lesser of (i) 4% of the outstanding shares on the immediately preceding December 31st or (ii) such amount as determined by the compensation committee of the board of directors. Effective January 1, 2018 and 2019, 1,290,609 and 1,317,935 additional shares, respectively, were automatically added to the shares authorized for issuance under the 2017 Plan.

As of June 30, 2019, there were 1,351,940 shares available for future issuance under the 2017 Plan.

2017 Employee Stock Purchase Plan

In January 2017, the board of directors adopted and the Company's stockholders approved the 2017 Employee Stock Purchase Plan (the "2017 ESPP"), which became effective upon the closing of the IPO. The Company initially reserved 302,000 shares of common stock for future issuance under the 2017 ESPP. The 2017 ESPP also provides that an additional number of shares will automatically be added to the shares authorized for issuance under the 2017 ESPP on January 1, 2018 and each January 1st thereafter through January 1, 2027. The number of shares added each year will be equal to the lesser of (i) 1% of the outstanding shares on the immediately preceding December 31st, (ii) 603,000 shares or (iii) such amount as determined by the compensation committee of the board of directors. Effective January 1, 2018 and 2019, 322,652 and 329,483 additional shares, respectively, were automatically added to the shares authorized for issuance under the 2017 ESPP. No offering periods under the 2017 ESPP had been initiated as of June 30, 2019.

Stock-based Compensation Expense

Total stock-based compensation expense recognized in the condensed consolidated statements of operations and comprehensive loss for the three and six months ended June 30, 2019 and 2018 was as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Research and development	$ 1,097	$ 1,212	$ 2,194	$ 2,362
General and administrative	1,416	1,148	2,861	2,266
Total stock-based compensation expense	$ 2,513	$ 2,360	$ 5,055	$ 4,628

RSA Activity

Pursuant to RSA agreements issued under the terms of the 2013 Plan, the Company, at its discretion, has the option to repurchase unvested shares underlying RSAs at the initial purchase price if the employees or non-employees terminate their service relationships with the Company. The shares underlying RSAs are recorded in stockholders' equity as they vest.

The following table summarizes RSA activity for the six months ended June 30, 2019 (in thousands, except per share amounts):

	RSAs	Weighted-Average Grant Date Fair Value per Share
Unvested as of December 31, 2018	7	$ —
Issued	—	$ —
Vested	(3)	$ —
Repurchased	—	$ —
Unvested as of June 30, 2019	4	$ —

The aggregate fair value of RSAs that vested during each of the three months ended June 30, 2019 and 2018, based upon the fair values of the stock underlying the RSAs on the day of vesting, was less than $0.1 million. The aggregate fair value of RSAs that vested during each of the six months ended June 30, 2019 and 2018, based upon the fair values of the stock underlying the RSAs on the day of vesting, was less than $0.1 million.

RSU Activity

The Company has also granted RSUs to its employees under the 2017 Plan. The following table summarizes RSU activity for the six months ended June 30, 2019 (in thousands, except per share amounts):

	RSUs	Weighted-Average Grant Date Fair Value per Share
Unvested as of December 31, 2018	371	$ 8.02
Issued	351	$ 4.40
Vested	—	$ —
Cancelled	(73)	$ 6.08
Unvested as of June 30, 2019	649	$ 6.28

No RSUs vested during the three or six months ended June 30, 2019 or 2018.

As of June 30, 2019, there was unrecognized stock-based compensation expense related to unvested RSUs of $2.7 million, which the Company expects to recognize over a weighted-average period of approximately 1.8 years.

Stock Option Activity

The fair value of stock options granted during the three and six months ended June 30, 2019 and 2018 was calculated on the date of grant using the following weighted-average assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Risk-free interest rate	2.1%	2.8%	2.5%	2.7%
Expected dividend yield	—%	—%	—%	—%
Expected term (in years)	5.7	5.8	6.0	6.0
Expected volatility	70.0%	66.6%	69.2%	65.1%

Using the Black-Scholes option pricing model, the weighted-average grant date fair value of stock options granted during the three months ended June 30, 2019 and 2018 was $3.30 per share and $8.89 per share, respectively. The weighted-average grant date fair value of stock options granted during the six months ended June 30, 2019 and 2018 was $2.88 per share and $13.74 per share, respectively.

The following table summarizes stock option activity during the six months ended June 30, 2019 (in thousands, except per share amounts):

	Options	Weighted-Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at December 31, 2018	5,023	$ 10.23	7.6	$ 3,133
Granted	1,020	$ 4.56		
Exercised	(33)	$ 3.01		
Cancelled	(218)	$ 15.11		
Outstanding at June 30, 2019	5,792	$ 9.09	7.4	$ 6,508
Exercisable at June 30, 2019	3,278	$ 6.92	6.4	$ 5,822

The aggregate intrinsic value of stock options exercised during the three months ended June 30, 2019 and 2018 was less than $0.1 million and $1.0 million, respectively. The aggregate intrinsic value of stock options exercised during the six months ended June 30, 2019 and 2018 was $0.1 million and $4.4 million, respectively.

As of June 30, 2019, there was unrecognized stock-based compensation expense related to unvested stock options of $16.8 million, which the Company expects to recognize over a weighted-average period of approximately 2.4 years.

10. Related-party Transactions

In July 2016, the Company entered into the Celgene Collaboration Agreement and a Series B-1 Preferred Stock Purchase Agreement with Celgene. Under the Celgene Collaboration Agreement, the Company received a non-refundable upfront payment of $225.0 million. Under the Series B-1 Preferred Stock Purchase Agreement, Celgene purchased 10,448,100 shares of Series B-1 convertible preferred stock for $36.1 million. These shares of Series B-1 convertible preferred stock converted into 2,831,463 shares of common stock upon the completion of the IPO. In addition, an affiliate of Celgene purchased 625,000 shares of the Company's common stock in the IPO at the public offering price of $16.00 per share for a total of $10.0 million.

Further information on subsequent transactions between the Company and Celgene are outlined in Note 13, "Subsequent Events".

11. Corporate Headquarters Lease

In November 2016, the Company entered into an operating lease agreement (the "Corporate Headquarters Lease") to occupy 51,000 square feet of laboratory and office space in Cambridge, Massachusetts. This facility serves as the Company's corporate headquarters. The lease term began on November 1, 2016 and extends to March 31, 2025. The Company has the option to extend the lease term for one consecutive five-year period, at the market rate, by giving the landlord written notice of its election to exercise the extension at least twelve months prior to the original expiration of the lease term. The Company provided the landlord with a security deposit in the form of a letter of credit in the amount of $1.3 million, which is recorded as restricted cash in other non-current assets in the condensed consolidated

balance sheets. The Corporate Headquarters Lease also provided the Company with a tenant improvement allowance of $0.5 million. Leasehold improvements related to this facility are being amortized over the shorter of their useful life or the lease term.

Accounting under ASC 842

As a result of the adoption of ASC 842 on January 1, 2019, the Company has recorded a right-of-use asset and a corresponding lease liability on the condensed consolidated balance sheets as of June 30, 2019. As there is no rate implicit in the Corporate Headquarters Lease, the Company estimated its incremental borrowing rate based upon a synthetic credit rating and yield curve analysis. Based upon this analysis, the Company calculated a discount rate of 8.0% for the Corporate Headquarters Lease.

As of June 30, 2019, the remaining minimum rental payments due under the Corporate Headquarters Lease were as follows (in thousands):

	Amount
Remainder of 2019	$ 2,140
2020	4,380
2021	4,505
2022	4,633
2023	4,764
2024 and thereafter	6,143
Total remaining minimum rental payments	26,565
Less: effect of discounting	(5,457)
Total lease liability	$ 21,108

The Company recorded operating lease expense for the Corporate Headquarters Lease of $1.0 million and $2.1 million for the three and six months ended June 30, 2019, respectively, pursuant to ASC 842. As of June 30, 2019, the remaining lease term of the Corporate Headquarters Lease was 5.8 years.

Accounting under ASC 840

Prior to the adoption of ASC 842, and pursuant to the legacy guidance within ASC 840, the Company recorded rent expense on a straight-line basis through the end of the lease term and also recorded deferred rent on the condensed consolidated balance sheets. The Company recorded the tenant improvement allowance as a deferred lease incentive and was amortizing the deferred lease incentive through a reduction of rent expense ratably over the lease term.

As of December 31, 2018, the future minimum lease payments due under the Corporate Headquarters Lease were as follows (in thousands):

	Minimum Lease Payments
2019	$ 4,260
2020	4,380
2021	4,505
2022	4,633
2023	4,764
2024 and thereafter	6,142
Total future minimum lease payments	$ 28,684

The Company recorded total rent expense for the Corporate Headquarters Lease of $1.0 million and $2.0 million for the three and six months ended June 30, 2018, respectively, pursuant to ASC 840.

12. Net Loss per Share

For purposes of the diluted loss per share calculation, outstanding stock options, unvested RSAs and unvested RSUs are considered to be potentially dilutive securities, however the following amounts were excluded from the calculation of diluted net loss per share because their effect would be anti-dilutive (in thousands):

	Three and Six Months Ended June 30,	
	2019	2018
Outstanding stock options	5,792	5,769
Unvested RSAs	4	10
Unvested RSUs	649	—
Total	6,445	5,779

13. Subsequent Events

Celgene License Agreement

On July 22, 2019 (the "Effective Date"), the Company entered into a License Agreement (the "Celgene License Agreement") with Celgene. Pursuant to the Celgene License Agreement, the Company granted to Celgene a worldwide and exclusive license to develop, manufacture and commercialize JTX-8064 and certain derivatives thereof (an "Initial Licensed Compound"), as well as any antibody (other than the Initial Licensed Compound) or other biologic controlled by the Company as of the Effective Date that is specifically directed to the LILRB2 receptor ("LILRB2") (the "Licensed Compounds").

The Celgene License Agreement provides Celgene with the sole right, at its sole cost and expense, to develop, seek regulatory approval for, manufacture and commercialize the Licensed Compounds and any product that comprises a Licensed Compound (each a "Licensed Product") for all uses and purposes. Celgene is obligated to use commercially reasonable efforts to develop, seek regulatory approval for and commercialize at least one Licensed Product comprising or incorporating the Initial Licensed Compound (any such Licensed Product, an "Initial Licensed Product"). During the term of the license, the Company is prohibited from developing, manufacturing or commercializing any product, other than Licensed Products, that contains an antibody or other biologic that is specifically directed to LILRB2 or any related antibody or related biologic.

Under the terms of the Celgene License Agreement, Celgene paid the Company a one-time, non-refundable upfront payment of $50.0 million in July 2019. The Company is also entitled to receive payments from Celgene upon the achievement of specified clinical, regulatory and sales milestones for the first Initial Licensed Product to achieve such milestones, including potential clinical and regulatory milestone payments up to an aggregate total of $180.0 million and potential sales milestone payments up to an aggregate total of $300.0 million.

The Company is also eligible to receive royalties at percentage rates ranging from mid-single-digits to low-double-digits, based on future annual net sales of the Initial Licensed Products, on an Initial Licensed Product-by-Initial Licensed Product and country-by-country basis until the later of (i) the date on which there are no longer any valid composition of matter or method of use claims within the Company's patents or patents jointly owned by the Company and Celgene related to the Initial Licensed Product in such country and (ii) the twelve-year anniversary of the date of the first commercial sale of the first Initial Licensed Product in such country (the "Royalty Term"). Royalty payments may be reduced in specified circumstances, including payments required to be made by Celgene to third parties to acquire patent rights, up to an aggregate minimum floor, or may be reduced upon the occurrence of certain specified events, including certain compulsory licenses, or if associated with a Licensed Product that is not an Initial Licensed Product.

Unless terminated earlier in accordance with its terms, the Celgene License Agreement provides that it will expire (i) on an Initial Licensed Product-by-Initial Licensed Product and country-by-country basis on the date of the expiration of the Royalty Term with respect to such Initial Licensed Product in such country and (ii) in its entirety upon the expiration of all applicable Royalty Terms with respect to the Initial Licensed Products in all countries, following which the applicable licenses under the License Agreement will become fully paid-up, perpetual, irrevocable and royalty-free.

Termination of Celgene Collaboration Agreement

In connection with the entry into the License Agreement, the Company and Celgene also entered into a termination agreement, terminating the Celgene Collaboration Agreement effective as of July 22, 2019.

Upon the effectiveness of the Termination Agreement, the Company will have no further performance obligations under the Celgene Collaboration Agreement. As a result, the Company now expects to recognize the balance of deferred revenue related to the Celgene Collaboration Agreement in the third quarter of 2019.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read together with our condensed consolidated financial statements and related notes appearing elsewhere in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the year ended December 31, 2018 that was filed with the United States Securities and Exchange Commission, or the SEC, on March 6, 2019. In addition to historical information, this discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of certain factors. We discuss factors that we believe could cause or contribute to these differences below and elsewhere in this Quarterly Report on Form 10-Q, including those factors set forth in the section entitled "Cautionary Note Regarding Forward-Looking Statements and Industry Data" and in the section entitled "Risk Factors" in Part II, Item 1A.

Overview

We are a clinical-stage immunotherapy company dedicated to transforming the treatment of cancer by developing therapies that enable the immune system to attack tumors and provide long-lasting benefits to patients. We have developed a suite of integrated technologies that comprise our Translational Science Platform, enabling us to comprehensively interrogate the cellular and molecular composition of tumors. By focusing on specific cell types, both immune and non-immune, within tumors, we can prioritize targets and then identify related biomarkers designed to match the right therapy to the right patient.

Our most advanced product candidate, vopratelimab, is a clinical-stage monoclonal antibody that binds to and activates the **I**nducible T cell **CO-S**timulator, or ICOS, a protein on the surface of certain T cells commonly found in many solid tumors.

We are currently conducting a Phase 2 clinical trial, which we refer to as EMERGE, of vopratelimab in combination with ipilimumab in PD-1 inhibitor experienced patients in two tumor types, non-small cell lung cancer and urothelial cancer. Enrollment in EMERGE commenced in June 2019. EMERGE is the first of the additional Phase 2 clinical studies of vopratelimab we plan to conduct based on the foundational relationship between the ICOS hi CD4 T cells and clinical benefit. EMERGE also includes new dosing schedules and a novel combination sequence based on our understanding of the kinetics between ipilimumab, the emergence of ICOS hi CD4 T cells and vopratelimab. The primary endpoint is overall response rate and secondary endpoints include safety, duration of response, progression free survival and overall survival. Additional assessments will include close monitoring of ICOS hi CD4 T cell emergence and a range of other biomarkers, including exploratory assessment of potential predictive biomarkers. We expect to report EMERGE data including preliminary efficacy and biomarker relationships to clinical outcomes for up to 80 patients in 2020. Beyond EMERGE, we are in the planning stages of additional Phase 2 studies of vopratelimab.

Prior to our EMERGE clinical trial, vopratelimab was assessed in a Phase 1/2 clinical trial that we refer to as ICONIC. In the ICONIC clinical trial, vopratelimab was observed to be safe and well-tolerated, both alone and in combination with nivolumab, an anti-PD-1 antibody. At the June 2018 annual meeting of the American Society of Clinical Oncology, or ASCO, we reported Response Evaluation Criteria in Solid Tumors, or RECIST, responses and other tumor reductions as determined by investigator assessment that were associated with an ICOS pharmacodynamic biomarker. We subsequently reported that these responses were durable, lasting six or more months and that all responders, as determined by investigator assessments, remained on study for more than one year. ICONIC also includes a dose-escalation portion to assess vopratelimab in combination with pembrolizumab, an anti-PD-1 antibody, and in combination with ipilimumab, an antibody that binds to CTLA-4 on certain T cells. In this dose-escalation portion of ICONIC, vopratelimab was observed to be safe and well-tolerated in combination with each of ipilimumab and pembrolizumab.

Our second product candidate, JTX-4014, is a clinical-stage anti-PD-1 antibody that we are developing primarily for potential use in combination with future product candidates, as we believe that combination therapy has the potential to be a mainstay of cancer immunotherapy. In December 2018, we commenced enrollment in a Phase 1 clinical trial of JTX-4014 monotherapy designed to assess safety and to determine the recommended Phase 2 dose. We have completed enrollment in this Phase 1 clinical trial and determined the recommended Phase 2 dose. We plan to report data from this Phase 1 clinical trial in the second half of 2019.

Our third product candidate, JTX-8064, was exclusively licensed to Celgene Corporation, or Celgene, in July 2019. JTX-8064 is an antibody that binds to LILRB2, which is a cell surface receptor expressed on macrophages. JTX-8064 is the first tumor-associated macrophage candidate to emerge from our Translational Science Platform. We believe

therapies targeting these innate immune cells may have the potential to benefit patients with tumors that are less likely to respond to existing T cell-focused approaches.

Beyond our product candidates, we continue to advance and build our discovery pipeline. We are discovering and developing next-generation immunotherapies by leveraging our Translational Science Platform to systematically and comprehensively interrogate cell types within the tumor microenvironment. Our broad discovery pipeline includes multiple programs targeting T-regulatory cells, macrophages and stromal cells. We believe that the use of our Translational Science Platform to efficiently identify novel immuno-oncology targets and advance them from discovery to investigational new drug application, or IND, stage is a sustainable approach that we plan to continually apply across our broad discovery pipeline and target selection process. We expect to announce a new development candidate and commence IND-enabling studies later in 2019.

On July 22, 2019, or the Effective Date, we entered into a License Agreement, or the Celgene License Agreement, with Celgene. Pursuant to the Celgene License Agreement, we granted to Celgene a worldwide and exclusive license to develop, manufacture and commercialize JTX-8064 and certain derivatives thereof (an Initial Licensed Compound), as well as any antibody, other than the Initial Licensed Compound, or other biologic controlled by us as of the Effective Date that is specifically directed to the LILRB2 receptor (a Licensed Compound).

The Celgene License Agreement provides Celgene with the sole right, at its sole cost and expense, to develop, seek regulatory approval for, manufacture and commercialize the Licensed Compounds and any product that comprises a Licensed Compound (each a Licensed Product) for all uses and purposes. Celgene is obligated to use commercially reasonable efforts to develop, seek regulatory approval for and commercialize at least one Licensed Product comprising or incorporating the Initial Licensed Compound (any such Licensed Product, an Initial Licensed Product).

Under the terms of the Celgene License Agreement, Celgene paid us a one-time, non-refundable upfront payment of $50.0 million in July 2019. We are also entitled to receive payments from Celgene upon the achievement of specified clinical, regulatory and sales milestones with respect to the first Initial Licensed Product to achieve such milestones, including potential clinical and regulatory milestone payments up to an aggregate total of $180.0 million and potential sales milestone payments up to an aggregate total of $300.0 million. We are also eligible to receive royalties at percentage rates ranging from mid-single-digits to low-double-digits, based on future annual net sales of the Initial Licensed Products, on an Initial Licensed Product-by-Initial Licensed Product and country-by-country basis.

In July 2016, we entered into a Master Research and Collaboration Agreement, or the Celgene Collaboration Agreement, and a Series B-1 Preferred Stock Purchase Agreement with Celgene. Under the terms of these agreements, we received a $225.0 million upfront cash payment and $36.1 million from the sale of 10,448,100 shares of our Series B-1 convertible preferred stock, which shares converted into 2,831,463 shares of common stock upon the completion of our initial public offering, or IPO, in 2017. In connection with the Celgene License Agreement, we and Celgene entered into a termination agreement, terminating the Celgene Collaboration Agreement effective as of July 22, 2019.

Since inception, our operations have focused on organizing and staffing our company, business planning, raising capital, developing our Translational Science Platform and conducting research, preclinical studies and clinical trials. We do not have any products approved for sale. We are subject to a number of risks comparable to those of other similar companies, including dependence on key individuals; the need to develop commercially viable products; competition from other companies, many of which are larger and better capitalized; and the need to obtain adequate additional financing to fund the development of our products. We have funded our operations through June 30, 2019 primarily through proceeds received from our IPO, the upfront payment received under the Celgene Collaboration Agreement and private placements of our convertible preferred stock.

Due to our significant research and development expenditures, we have generated substantial operating losses in each annual period since our inception. We have incurred an accumulated deficit of $183.4 million through June 30, 2019. We expect to incur substantial additional losses in the future as we expand our research and development activities.

Financial Operations Overview

Revenue

For the six months ended June 30, 2019, we recognized $28.4 million of collaboration revenue under the Celgene Collaboration Agreement related to the $225.0 million upfront payment received in 2016. We had $69.4 million of deferred revenue as of June 30, 2019. The Celgene Collaboration Agreement was subsequently terminated effective July 22, 2019. As a result, we will have no further performance obligations under the Celgene Collaboration Agreement, and we now expect to recognize the balance of this deferred revenue in the third quarter of 2019. In addition, we also expect to recognize $50.0 million of revenue related to the Celgene License Agreement in the second half of 2019.

In the future, we may generate revenue from product sales or collaboration agreements, strategic alliances and licensing arrangements, including the Celgene License Agreement. We expect that our revenue will fluctuate from quarter-to-quarter and year-to-year as a result of the timing and amount of license fees, milestones, reimbursement of costs incurred and other payments, if any, and product sales, to the extent any products are successfully commercialized. If we or third parties fail to complete the development of our product candidates in a timely manner or obtain regulatory approval for them, our ability to generate future revenue, and our results of operations and financial position, would be materially adversely affected.

Operating Expenses

Research and Development Expenses

Research and development expenses represent costs incurred by us for the discovery, development and manufacture of our current and future product candidates and include: external research and development expenses incurred under arrangements with third parties, including academic and non-profit institutions, contract research organizations, contract manufacturing organizations and consultants; salaries and personnel-related costs, including non-cash stock-based compensation expense; license fees to acquire in-process technology and other expenses, which include direct and allocated expenses for laboratory, facilities and other costs.

We use our employee and infrastructure resources across multiple research and development programs directed toward developing our Translational Science Platform and for identifying, testing and developing product candidates. We manage certain activities such as contract research and manufacture of our product candidates and discovery programs through our third-party vendors.

At this time, we cannot reasonably estimate or know the nature, timing and estimated costs of the efforts that will be necessary to complete the development of our product candidates. We are also unable to predict when, if ever, material net cash inflows will commence from sales of our product candidates. This is due to the numerous risks and uncertainties associated with developing such product candidates, including the uncertainty of:

- addition and retention of key research and development personnel;
- establishing an appropriate safety profile with IND-enabling toxicology studies;
- the cost to acquire or make therapies to study in combination with our immunotherapies;
- successful enrollment in and completion of clinical trials;
- establishing agreements with third-party contract manufacturing organizations for clinical supply for our clinical trials and commercial manufacturing, if our product candidates are approved;
- receipt of marketing approvals from applicable regulatory authorities;
- commercializing products, if and when approved, whether alone or in collaboration with others;
- the cost to develop complementary diagnostics and/or companion diagnostics as needed for each of our development programs;
- the costs associated with the development of any additional product candidates we acquire through third-party collaborations or identify through our Translational Science Platform;
- the terms and timing of any collaboration, license or other arrangement, including the terms and timing of any milestone payments thereunder;
- obtaining and maintaining patent and trade secret protection and regulatory exclusivity for our products if and when approved; and

- continued acceptable safety profiles of the products following approval.

A change in the outcome of any of these variables with respect to the development of any of our product candidates would significantly change the costs, timing and viability associated with the development of that product candidate. We plan to increase our research and development expenses for the foreseeable future as we advance our product candidates through clinical trials and continue the enhancement of our Translational Science Platform and the progression of our pipeline.

Due to the inherently unpredictable nature of preclinical and clinical development, we do not allocate all of our internal research and development expenses on a program-by-program basis as they primarily relate to personnel and lab consumables costs that are deployed across multiple programs under development. Our research and development expenses also include external costs, which we do track on a program-by-program basis following the program's nomination as a development candidate. We began incurring such external costs for vopratelimab in 2015, JTX-4014 in 2016 and JTX-8064 in 2017.

Included below are external research and development and external clinical and regulatory costs for vopratelimab, JTX-4014, JTX-8064 and our pre-development candidates:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2019**	**2018**	**2019**	**2018**
Vopratelimab	$ 3,586	$ 5,994	$ 7,529	$ 10,764
JTX-4014	901	2,092	1,913	4,677
JTX-8064	3,125	315	4,708	557
Pre-development candidates	105	223	254	583
Total external research and development and clinical and regulatory costs	$ 7,717	$ 8,624	$ 14,404	$ 16,581

Research and development activities account for a significant portion of our operating expenses. As we continue to implement our business strategy, we expect our research and development expenses to increase over the next several years. We expect that these expenses will increase as we:

- complete our Phase 1/2 ICONIC clinical trial of vopratelimab;
- continue our Phase 2 EMERGE clinical trial of vopratelimab and initiate additional Phase 2 clinical trials of vopratelimab;
- complete our Phase 1 clinical trial of JTX-4014 and initiate future clinical trials;
- continue to identify and develop potential predictive biomarkers and complementary diagnostics and/or companion diagnostics for our product candidates;
- continue to develop and enhance our Translational Science Platform and advance our pipeline of immunotherapy programs and our early research activities into later stages of development; and
- increase our headcount to meet our evolving needs.

Product candidates in later stages of clinical development generally incur higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials.

General and Administrative Expenses

General and administrative expenses consist of salaries and personnel-related costs, including non-cash stock-based compensation expense, for our personnel in executive, business development, legal, finance and accounting, human resources and other administrative functions, consulting fees, facility costs not otherwise included in research and development expenses, fees paid for accounting and tax services, insurance expenses and non-litigation legal costs. Non-litigation legal costs include general corporate legal fees, patent legal fees and related costs. We anticipate that our general and administrative expenses will increase in the future to support our continued operations.

Other Income, Net

Other income, net, consists primarily of interest and investment income on our cash, cash equivalents and investments.

Results of Operations

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

The following table summarizes our results of operations for the three months ended June 30, 2019 and 2018:

	Three Months Ended June 30,		
(in thousands)	**2019**	**2018**	**$ Change**
Revenue:			
Collaboration revenue—related party	$ 17,446	$ 19,378	$ (1,932)
Operating expenses:			
Research and development	18,130	18,495	(365)
General and administrative	7,323	6,523	800
Total operating expenses	25,453	25,018	435
Operating loss	(8,007)	(5,640)	(2,367)
Other income, net	1,026	966	60
Loss before provision for income taxes	(6,981)	(4,674)	(2,307)
Provision for income taxes	12	—	12
Net loss	$ (6,993)	$ (4,674)	$ (2,319)

Collaboration Revenue

Collaboration revenue for the three months ended June 30, 2019 and 2018 was solely related to the recognition of the upfront payment we received under our Celgene Collaboration Agreement that was executed in July 2016. Collaboration revenue fluctuates based upon our pattern of performance for each performance obligation.

Research and Development Expenses

The following table summarizes our research and development expenses for the three months ended June 30, 2019 and 2018:

	Three Months Ended June 30,		
(in thousands)	**2019**	**2018**	**$ Change**
Employee compensation	$ 6,079	$ 5,346	$ 733
External research and development	3,942	4,453	(511)
External clinical and regulatory	3,775	4,171	(396)
Lab consumables	1,889	2,147	(258)
Consulting research	334	436	(102)
Facility costs	1,445	1,433	12
Other research	666	509	157
Total research and development expenses	$ 18,130	$ 18,495	$ (365)

Research and development expenses decreased by $0.4 million from $18.5 million for the three months ended June 30, 2018 to $18.1 million for the three months ended June 30, 2019. The decrease in research and development expenses was primarily attributable to the following:

- $0.5 million of decreased external research and development expenses primarily attributable to vopratelimab manufacturing costs incurred during the three months ended June 30, 2018, partially offset by increased JTX-8064 IND-enabling costs;
- $0.4 million of decreased external clinical and regulatory costs primarily attributable to decreased activities within our Phase 1/2 ICONIC clinical trial; and
- $0.3 million of decreased lab consumables expenses during the three months ended June 30, 2019 as compared to the three months ended June 30, 2018.

These decreases were partially offset by $0.7 million of increased employee compensation costs primarily arising from increased personnel.

General and Administrative Expenses

The following table summarizes our general and administrative expenses for the three months ended June 30, 2019 and 2018:

	Three Months Ended June 30,		
(in thousands)	2019	2018	$ Change
Employee compensation	$ 3,471	$ 3,003	$ 468
Professional services	1,486	1,432	54
Facility costs	1,144	1,135	9
Other	1,222	953	269
Total general and administrative expenses	$ 7,323	$ 6,523	$ 800

General and administrative expenses increased by $0.8 million from $6.5 million for the three months ended June 30, 2018 to $7.3 million for the three months ended June 30, 2019. The increase in general and administrative expenses was primarily attributable to the following:

- $0.5 million of increased employee compensation costs arising from increased personnel, including $0.3 million of increased stock-based compensation expense; and
- $0.3 million of increased other general and administrative costs to support our operations.

Other Income, net

Other income, net, increased by $0.1 million from the three months ended June 30, 2018 to the three months ended June 30, 2019. The increase in other income, net is attributable to increased interest and investment income on our cash, cash equivalents and investments as a result of an overall increased rate of return.

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

The following table summarizes our results of operations for the six months ended June 30, 2019 and 2018:

	Six Months Ended June 30,		
(in thousands)	2019	2018	$ Change
Revenue:			
Collaboration revenue—related party	$ 28,427	$ 30,573	$ (2,146)
Operating expenses:			
Research and development	35,410	36,657	(1,247)
General and administrative	14,515	13,325	1,190
Total operating expenses	49,925	49,982	(57)
Other income, net	2,152	1,707	445
Loss before provision for income taxes	(19,346)	(17,702)	(1,644)
Provision for income taxes	24	—	24
Net loss	$ (19,370)	$ (17,702)	$ (1,668)

Collaboration Revenue

Collaboration revenue for the six months ended June 30, 2019 and 2018 was solely related to the recognition of the upfront payment we received under our Celgene Collaboration Agreement that was executed in July 2016. Collaboration revenue fluctuates based upon our pattern of performance for each performance obligation.

Research and Development Expenses

The following table summarizes our research and development expenses for the six months ended June 30, 2019 and 2018:

	Six Months Ended June 30,		
(in thousands)	**2019**	**2018**	**$ Change**
Employee compensation	$ 12,699	$ 11,487	$ 1,212
External research and development	6,371	8,332	(1,961)
External clinical and regulatory	8,033	8,249	(216)
Lab consumables	3,486	4,018	(532)
Consulting research	564	747	(183)
Facility costs	2,880	2,813	67
Other research	1,377	1,011	366
Total research and development expenses	$ 35,410	$ 36,657	$ (1,247)

Research and development expenses decreased by $1.2 million from $36.7 million for the six months ended June 30, 2018 to $35.4 million for the six months ended June 30, 2019. The decrease in research and development expenses was primarily attributable to the following:

- $2.0 million of decreased external research and development costs primarily attributable to vopratelimab manufacturing costs and JTX-4014 IND-enabling costs incurred during the six months ended June 30, 2018, partially offset by increased JTX-8064 IND-enabling costs; and
- $0.5 million of decreased lab consumables expenses during the six months ended June 30, 2019 as compared to the six months ended June 30, 2018.

These decreases were partially offset by $1.2 million of increased employee compensation costs primarily attributable to increased personnel.

General and Administrative Expenses

The following table summarizes our general and administrative expenses for the six months ended June 30, 2019 and 2018:

	Six Months Ended June 30,		
(in thousands)	**2019**	**2018**	**$ Change**
Employee compensation	$ 7,321	$ 6,109	$ 1,212
Professional services	2,443	3,029	(586)
Facility costs	2,280	2,225	55
Other	2,471	1,962	509
Total general and administrative expenses	$ 14,515	$ 13,325	$ 1,190

General and administrative expenses increased by $1.2 million from $13.3 million for the six months ended June 30, 2018 to $14.5 million for the six months ended June 30, 2019. The increase in general and administrative expenses was attributable to:

- $1.2 million of increased employee compensation costs arising from increased personnel, including $0.6 million of increased stock-based compensation expense; and
- $0.5 million of increased other general and administrative costs to support our operations.

This increase was partially offset by $0.6 million of decreased professional services costs associated with fewer consultants and temporary staff.

Other Income, net

Other income, net, increased by $0.4 million from $1.7 million for the six months ended June 30, 2018 to $2.2 million for the six months ended June 30, 2019. The increase in other income, net is attributable to increased interest and investment income on our cash, cash equivalents and investments as a result of an overall increased rate of return.

Liquidity and Capital Resources

Sources of Liquidity

We have funded our operations through June 30, 2019 primarily through net proceeds from our IPO of $106.4 million, a non-refundable upfront payment of $225.0 million received in connection with the Celgene Collaboration Agreement and gross proceeds from private placements of our convertible preferred stock of $139.1 million. As of June 30, 2019, we had cash, cash equivalents and investments of $152.0 million. In July 2019, we received a non-refundable upfront payment of $50.0 million related to the Celgene License Agreement.

Funding Requirements

Our plan of operation is to continue implementing our business strategy, the research and development of our current product candidates, our preclinical development activities, the expansion of our research pipeline and the enhancement of our internal research and development capabilities. Due to the inherently unpredictable nature of preclinical and clinical development and given the early stage of our programs and product candidates, we cannot reasonably estimate the costs we will incur and the timelines that will be required to complete development, obtain marketing approval, and commercialize our products, if and when approved. For the same reasons, we are also unable to predict when, if ever, we will generate revenue from product sales or whether, or when, if ever, we may achieve profitability. Clinical and preclinical development timelines, the probability of success, and development costs can differ materially from expectations. In addition, we cannot forecast which products, if and when approved, may be subject to future collaborations, when such arrangements will be secured, if at all, and to what degree such arrangements would affect our development plans and capital requirements.

Due to our significant research and development expenditures, we have generated substantial operating losses since inception. We have incurred an accumulated deficit of $183.4 million through June 30, 2019. We expect to incur substantial additional losses in the future as we expand our research and development activities and continue to advance our programs. Based on our research and development plans, we expect that our existing cash, cash equivalents and investments of $152.0 million as of June 30, 2019, combined with the $50.0 million upfront payment subsequently received from Celgene in July 2019 pursuant to the Celgene License Agreement, will enable us to fund

our operating expenses and capital expenditure requirements into the second half of 2021. However, we have based this estimate on assumptions that may prove to be incorrect, and we could exhaust our capital resources sooner than we expect. The timing and amount of our operating expenditures will depend largely on:

- the timing and progress of preclinical and clinical development activities;
- the cost to access, acquire, or develop therapies to study in combination with our immunotherapies;
- successful enrollment in and completion of clinical trials;
- the cost to develop complementary diagnostics and/or companion diagnostics as needed for each of our development programs;
- our ability to establish agreements with third-party manufacturers for clinical supply for our clinical trials and, if our product candidate is approved, commercial manufacturing;
- the costs associated with the development of any additional product candidates we acquire through acquisition, third-party collaborations or identify through our Translational Science Platform;
- our ability to maintain our current research and development programs and enhancement of our Translational Science Platform;
- addition and retention of key research and development personnel;
- our efforts to enhance operational, financial and information management systems, and hire additional personnel, including personnel to support development of our product candidates;
- the legal patent costs involved in prosecuting patent applications and enforcing patent claims and other intellectual property claims;
- the costs and ongoing investments to in-license or acquire additional technologies, including the in-license of intellectual property related to our potential product candidates, the effectiveness of which is subject to certain conditions; and
- the terms and timing of any collaboration, license or other arrangement, including the terms and timing of any option and milestone payments thereunder.

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

In addition to the variables described above, if and when any of our product candidates successfully complete development, we expect to incur substantial additional costs associated with regulatory filings, marketing approval, post-marketing requirements, maintaining our intellectual property rights, and regulatory protection, in addition to other costs. We cannot reasonably estimate these costs at this time.

Until such time, if ever, as we can generate substantial product revenue, we expect to finance our cash needs through a combination of equity or debt financings, collaborations, licensing arrangements and strategic alliances. We currently do not have a credit facility or committed sources of capital. To the extent that we raise additional capital through the future sale of equity or debt, the ownership interests of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing common stockholders. If we raise additional funds through the issuance of debt securities, these securities could contain covenants that would restrict our operations. We may require additional capital beyond our currently anticipated amounts. Additional capital may not be available on reasonable terms, or at all. If we raise additional funds through collaboration arrangements in the future, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates, or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce, or terminate development or future commercialization efforts, or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Cash Flows

The following table provides information regarding our cash flows for the six months ended June 30, 2019 and 2018:

	Six Months Ended June 30,	
(in thousands)	**2019**	**2018**
Net cash (used in) provided by:		
Operating activities	$ (44,476)	$ (25,677)
Investing activities	34,466	51,062
Financing activities	98	1,165
Net (decrease) increase in cash, cash equivalents and restricted cash	$ (9,912)	$ 26,550

Cash Used in Operating Activities

Net cash used in operating activities for the six months ended June 30, 2019 was $44.5 million, compared to net cash used in operating activities of $25.7 million for the six months ended June 30, 2018. Cash used in operating activities increased by $18.8 million primarily due to $16.8 million of state and federal income tax refunds received during the six months ended June 30, 2018.

Cash Provided by Investing Activities

Net cash provided by investing activities for the six months ended June 30, 2019 was $34.5 million, compared to net cash provided by investing activities of $51.1 million for the six months ended June 30, 2018. Cash provided by investing activities decreased by $16.6 million primarily due to decreased proceeds from sales and maturities of investments, partially offset by decreased purchases of investments, during the six months ended June 30, 2019 as compared to the six months ended June 30, 2018. Proceeds received from sales and maturities of investments were either re-invested or used to fund operations.

Cash Provided by Financing Activities

Net cash provided by financing activities for the six months ended June 30, 2019 was $0.1 million, compared to net cash provided by financing activities of $1.2 million for the six months ended June 30, 2018. Cash provided by financing activities decreased by $1.1 million due to a decrease in proceeds received from the exercise of stock options during the six months ended June 30, 2019 as compared to the six months ended June 30, 2018.

Off-Balance Sheet Arrangements

We did not have, during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under applicable SEC rules.

Critical Accounting Policies and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our condensed consolidated financial statements, which have been prepared in accordance with generally accepted accounting principles in the United States. The preparation of these condensed consolidated financial statements requires us to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, we evaluate our estimates which include, but are not limited to, estimates related to revenue recognized under the Celgene Collaboration Agreement (including estimates of internal and external costs expected to be incurred to satisfy performance obligations), the determination of the discount rate utilized in the initial application of ASC Topic 842, accrued expenses, stock-based compensation expense and income taxes. We base our estimates on historical experience and other market specific or other relevant assumptions we believe to be reasonable under the circumstances. Actual results could differ from those estimates.

There were no material changes to our critical accounting policies as reported in our Annual Report on Form 10-K for the year ended December 31, 2018, which was filed with the SEC on March 6, 2019.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

We are a smaller reporting company as defined by Rule 12b-2 of the Securities Exchange Act of 1934, or the Exchange Act, and are not required to provide the information under this item.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and our principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2019. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by the company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of June 30, 2019, our principal executive officer and principal financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15(d)-15(f) under the Exchange Act) that occurred during the period covered by this Quarterly Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

We are not currently a party to any material legal proceedings.

Item 1A. Risk Factors

Our business is subject to numerous risks. The following important factors, among others, could cause our actual results to differ materially from those expressed in forward-looking statements made by us or on our behalf in this Quarterly Report on Form 10-Q and other filings with the Securities and Exchange Commission, or the SEC, press releases, communications with investors, and oral statements. Actual future results may differ materially from those anticipated in our forward-looking statements. We undertake no obligation to update any forward-looking statements, whether as a result of new information, future events, or otherwise.

Risks Related to Product Development and Regulatory Process

We are early in our development efforts. Our product candidates vopratelimab and JTX-4014 are clinical-stage programs and other future product candidates are in preclinical or earlier stages of development. If we are unable to advance our product candidates through clinical development, advance other future product candidates to clinical development or obtain marketing approval and ultimately commercialize any product candidates or experience significant delays in doing so, our business will be materially harmed.

We are early in our development efforts: vopratelimab and JTX-4014 are our only clinical-stage product candidates, and other future product candidates are in preclinical or earlier stages of development. We have invested substantially all of our efforts and financial resources in the identification of targets and early stage, preclinical and clinical development of monoclonal antibodies, including the development of vopratelimab, JTX-4014 and JTX-8064.

Our other efforts have been invested in early stage, preclinical and earlier development programs. Our ability to generate product revenues, which we do not expect will occur for many years, if ever, will depend heavily on the successful development and eventual commercialization of our current and/or future product candidates, which may never occur. We currently generate no revenues from sales of any products, and we may never be able to develop or commercialize a marketable product. In July 2019, we granted an exclusive license for the development, manufacture and commercialization of JTX-8064 to Celgene Corporation, or Celgene, and we may never receive any payments from Celgene for the achievement of research and development or commercial milestones, or royalties from potential future sales of JTX-8064. Vopratelimab, JTX-4014 and future product candidates will require additional preclinical and clinical development, management of clinical, preclinical and manufacturing activities, marketing approval in the United States and other markets, demonstrating effectiveness to pricing and reimbursement authorities, obtaining sufficient manufacturing supply for both clinical development and commercial production, building of a commercial organization, and substantial investment and significant marketing efforts before we generate any revenues from product sales. In addition, our product development programs contemplate the development of complementary diagnostics and/or companion diagnostics, which are assays or tests to identify an appropriate patient population. Complementary diagnostics and companion diagnostics are subject to regulation as medical devices and, if there are no adequate complementary diagnostics and/or companion diagnostics currently on the market for our product candidates, we may elect to advance a diagnostic and that diagnostic would have to be approved or cleared for marketing by the Food and Drug Administration, or FDA, or comparable foreign regulatory agencies before we could commercialize it. The success of our current and future product candidates will depend on several factors, including the following:

- successful completion of preclinical studies and advancement to clinical development of our future product candidates;
- acceptance of investigational new drug applications, or INDs, for our planned clinical trials or future clinical trials;
- successful enrollment and completion of clinical trials;
- demonstration of a benefit/risk profile for our current and future product candidates that is sufficient to support a successful biologics license application, or BLA;
- successful development and marketing approval and clearance of complementary diagnostics and/or companion diagnostics for use with our current and future product candidates, if applicable;
- receipt and maintenance of marketing approvals from applicable regulatory authorities;

- approval by national pricing and reimbursement agencies (such as NICE, National Institute for Health Care and Excellence in the United Kingdom);
- establishing agreements with third-party manufacturers for clinical supply for our clinical trials and commercial manufacturing, if our product candidate is approved;
- obtaining and maintaining patent and trade secret protection or regulatory exclusivity for our product candidates;
- launching commercial sales of our current and future product candidates, if and when approved;
- acceptance of our product candidates, if and when approved, by patients, the medical community and third-party payors;
- effectively competing with other therapies;
- obtaining and maintaining healthcare coverage and adequate reimbursement;
- enforcing and defending intellectual property rights and claims;
- successful completion of clinical confirmatory trials to verify clinical benefit, if applicable; and
- maintaining a continued acceptable safety profile of the product candidates following approval.

If we do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to successfully commercialize our current and future product candidates, which would materially harm our business. If we do not receive marketing approvals for our current and future product candidates, we may not be able to continue our operations.

We rely on our Translational Science Platform to identify and develop product candidates. Our competitive position could be materially harmed if our competitors develop a platform similar to our Translational Science Platform and develop rival product candidates.

We rely on unpatented know-how, inventions and other proprietary information, to maintain our competitive position. We consider know-how to be our primary intellectual property with respect to our Translational Science Platform. Know-how can be difficult to protect. In particular, we anticipate that with respect to this platform, this know-how may over time be disseminated within the industry through independent development, the publication of journal articles describing the methodology, and the movement of skilled personnel.

We cannot rule out that our competitors may have or obtain the knowledge necessary to analyze and characterize tumors for the purpose of identifying and developing products that could compete with the product candidates we develop. Our competitors may also have significantly greater financial, product development, technical, and human resources and access to other human tumors than we do and may have significantly greater experience in using translational science methodology to identify and develop product candidates.

We may not be able to prohibit our competitors from using translational science methods to develop product candidates, including such methods that are the same as or similar to our own. If our competitors use translational science methods to identify and develop products that compete with our current and future product candidates, our ability to develop and market a promising product or product candidate may diminish substantially, which could have a material adverse effect on our business prospects, financial condition, and results of operations.

Clinical product development involves a lengthy and expensive process, with an uncertain outcome. We will incur additional costs in connection with, and may experience delays, in completing, or ultimately be unable to complete, the development and commercialization of our current and future product candidates, and any complementary diagnostics and/or companion diagnostics.

Our product candidates vopratelimab and JTX-4014 are clinical-stage programs and future product candidates are in preclinical or earlier stages of development. The risk of failure at any stage of clinical or preclinical development is high. It is impossible to predict when or if vopratelimab, JTX-4014 and future product candidates will prove effective and safe in humans and will receive marketing approval. Before obtaining marketing approval from regulatory authorities for the sale of our product candidates, we must complete preclinical studies and then conduct extensive clinical trials to demonstrate the safety and efficacy of our current and future product candidates in humans. Clinical testing is expensive, difficult to design and implement, can take many years to complete or may be delayed and is uncertain as to outcome. A failure of one or more clinical trials can occur at any stage of testing. The outcome of preclinical development testing and early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results. Moreover, preclinical and clinical data are often susceptible to varying

interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval of their product candidates. Our preclinical studies and clinical trials may not be successful.

The FDA or comparable foreign regulatory authorities could change their position on the acceptability of our trial designs or the clinical endpoints selected, which may require us to complete more preclinical studies or provide additional data before continuing clinical trials. In the event we are required to satisfy additional FDA requests, the completion of our clinical trials for vopratelimab and JTX-4014 may be delayed. Successful completion of our clinical trials is a prerequisite to submitting a BLA to the FDA and a Marketing Authorization Application, or MAA, in Europe for our current and future product candidates and, consequently, the ultimate approval and commercial marketing of our current and future product candidates. We do not know whether any of our clinical trials will be completed on schedule, if at all.

We may experience delays in completing our preclinical studies and initiating or completing clinical trials, and we may experience numerous unforeseen events during, or as a result of, any potential future clinical trials that could delay or prevent our ability to receive marketing approval of our current and future product candidates, including:

- regulators, institutional review boards, or IRBs, or ethics committees may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we may experience delays in reaching, or fail to reach, agreement on acceptable terms with prospective trial sites and prospective contract research organizations, or CROs;
- clinical trials may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional preclinical studies or clinical trials or abandon product development programs;
- the number of patients required for clinical trials may be larger than we anticipate;
- it may be difficult to enroll a sufficient number of patients with a predictive biomarker or enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials or fail to return for post-treatment follow-up at a higher rate than we anticipate;
- our third-party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all, or may deviate from the clinical trial protocol or drop out of the trial, which may require that we add new clinical trial sites or investigators;
- we may elect to, or regulators or IRBs or ethics committees may require that we or our investigators, suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements or a finding that the participants are being exposed to unreasonable and significant health risks;
- the cost of clinical trials may be greater than we anticipate;
- the supply or quality of materials or other materials necessary to conduct clinical trials may be insufficient or inadequate;
- the size of the patient population required to validate our biomarker-driven strategy may be larger than we anticipate;
- competitors may obtain regulatory approval ahead of us for compounds similar to ours, preventing us from obtaining regulatory approval despite positive clinical data;
- our product candidates may have undesirable side effects or other unexpected characteristics, causing us to suspend or terminate the trials, or reports may arise from preclinical or clinical testing of other similar cancer therapies that raise safety or efficacy concerns about our product candidates; and
- the FDA or other regulatory authorities may require us to submit additional data or impose other requirements before permitting us to initiate or continue a clinical trial.

We could encounter delays if a clinical trial is suspended or terminated by us, by the IRBs of the institutions in which such trials are being conducted or ethics committees, or by the FDA or other regulatory authorities, or recommended for suspension or termination by the Data Safety Monitoring Board, or DSMB, for such trial. Such authorities or we may impose such a suspension or termination 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, including those issues or effects seen in other drugs or drug candidates in the class to which our drug candidates belong, failure to demonstrate a benefit from using a product, changes in governmental regulations or lack of adequate funding to continue the clinical trial. Many of the factors that result in a delay in the commencement

or completion of clinical trials may also ultimately lead to the denial of marketing approval of our product candidates. Further, regulatory authorities may disagree with our clinical trial design and our interpretation of data from clinical trials or may change the requirements for approval even after such authorities have reviewed and commented on the design for our clinical trials.

If we are required to conduct additional clinical trials or other testing, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, or if we are unable to successfully complete clinical trials or other testing of our current and future product candidates, we may:

- be delayed in obtaining marketing approval for our product candidates;
- not obtain marketing approval at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- be subject to post-marketing testing requirements; or
- have the product removed from the market after obtaining marketing approval.

Our product development costs will also increase if we experience delays in testing or marketing approvals. We do not know whether any of our clinical trials will need to be restructured, will be completed on schedule, or will begin as planned, if at all. Any delays in our preclinical or future clinical development programs may harm our business, financial condition and prospects significantly.

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

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

- the patient eligibility criteria defined in the protocol;
- our ability to identify and enroll sufficient number of patients with a predictive biomarker;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity of patients to study sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions of the potential advantages of the product candidate being studied in relation to other available therapies;
- our ability to obtain and maintain patient consents for participation in our clinical trials and, where appropriate, biopsies for future patient enrichment efforts; and
- the risk that patients enrolled in clinical trials will drop out of the trials before completion or, because they are late-stage cancer patients, will not survive the full terms of the clinical trials.

In addition, our clinical trials will compete with other clinical trials for product candidates that are in the same therapeutic areas as our current and future product candidates. 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 conducted by one of our competitors. Since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials at such sites. Moreover, because our current and future 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, rather than enroll patients in our ongoing or any future clinical trial.

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 current and future product candidates.

Our current and future product candidates we develop may cause undesirable side effects or have other properties when used alone or in combination with other approved pharmaceutical products or investigational new drugs that could halt their clinical development, prevent their marketing approval, limit their commercial potential or result in significant negative consequences.

Although our current and future product candidates will undergo safety testing to the extent possible and, where applicable, under such conditions discussed with regulatory authorities, not all adverse effects of drugs can be predicted or anticipated. In order to obtain marketing approval of a product candidate, we must demonstrate safety in various non-clinical and clinical tests. At the time of initiating human clinical trials, we may not have conducted or may not conduct the types of non-clinical testing ultimately required by regulatory authorities, or future non-clinical tests may indicate that our product candidates are not safe for use. Non-clinical testing and clinical testing are both expensive and time-consuming and have uncertain outcomes.

Immunotherapy, and its method of action of harnessing the body's immune system, is powerful and could lead to serious side effects that we only discover in clinical trials. Undesirable or clinically unmanageable side effects could occur and cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of marketing approval by the FDA or comparable foreign regulatory authorities. Results of our trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics. Unforeseen side effects from our current and future product candidates could arise either during clinical development or, if such side effects are more rare, after our current and future product candidates have been approved by regulatory authorities and the approved product has been marketed, resulting in the exposure of additional patients. Although we have established that vopratelimab is safe in humans, we cannot predict if future clinical trials of our product candidates, either alone or in combination with other therapies, will demonstrate safety in humans. If any of our current or future product candidates fail to demonstrate safety and efficacy in clinical trials or do not gain marketing approval, we will not be able to generate revenue and our business will be harmed.

We cannot predict whether future safety and toxicology studies may cause undesirable effects. In addition, success in initial tests does not ensure that later testing will be successful. Our product candidates could cause undesirable side effects similar to those toxicities observed in other immunotherapies. It remains possible that new or more severe toxicities could be seen if any product candidate is used in combination with other agents. Such toxicities, if observed, could result in development delays, a determination by the FDA or other regulatory authorities that additional safety testing is required, delay or denial of approval, or limit the labeling and thus overall market scope for such product candidate.

If unacceptable toxicities arise in the development of our current and future product candidates, we or an existing or future collaborator or licensee could suspend or terminate clinical trials, or the FDA or comparable foreign regulatory authorities could order us, a collaborator or licensee to cease clinical trials or deny approval of our current and future product candidates for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled subjects to complete the trial or result in potential product liability claims. In addition, these side effects may not be appropriately recognized or managed by the treating medical staff, particularly outside of our collaborators or licensees as toxicities resulting from cancer immunotherapies are not normally encountered in the general patient population and by medical personnel. We expect to have to train medical personnel using any of our product candidates to understand the side effect profile of such product candidates for both our ongoing and planned clinical trials and upon commercialization of such product candidates. The inability to recognize and manage the potential side effects of our product candidates could result in patient deaths. Any of these occurrences may prevent us from achieving or maintaining market acceptance of the affected product candidate and may harm our business, financial condition and prospects significantly.

We may seek a Breakthrough Therapy Designation or Fast Track Designation by the FDA for our current and future product candidates, and we may be unsuccessful. If we are successful, the designation may not actually lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that our current and future product candidates will receive marketing approval.

We may seek a Breakthrough Therapy Designation or Fast Track Designation for our current and future product candidates. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over currently approved therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. Fast Track Designation may be available if a product is intended for the treatment of a serious or life-threatening condition and preclinical or clinical data demonstrate the potential to address an unmet medical need for this condition. Drugs that receive Breakthrough Therapy Designation or Fast Track Designation by the FDA are eligible for accelerated approval and priority review.

The FDA has broad discretion whether or not to grant Breakthrough Therapy Designation or Fast Track Designation. Even if we receive Breakthrough Therapy Designation or Fast Track Designation for a product candidate, such designation may not result in a faster development process, review or approval compared to conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one of our current or future product candidates receives Breakthrough Therapy Designation or Fast Track Designation, the FDA may later decide that the drugs no longer meet the conditions for qualification and rescind the designation.

We may seek Orphan Drug Designation for our current and future product candidates, and we may be unsuccessful or may be unable to maintain the benefits associated with Orphan Drug Designation, including the potential for market exclusivity.

As part of our business strategy, we may seek Orphan Drug Designation for our current and future product candidates, and we may be unsuccessful. 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.

In Europe, Orphan Drug Designation entitles a party to a number of incentives, such as protocol assistance and scientific advice specifically for designated orphan medicines, and potential fee reductions depending on the status of the sponsor.

Generally, if a drug with an Orphan Drug Designation subsequently receives the first marketing approval for the indication for which it has such designation, the drug is entitled to a period of marketing exclusivity, which precludes the European Medicines Agency or the FDA from approving another marketing application for the same drug and indication for a set time period, except in limited circumstances.

Even if we obtain orphan drug exclusivity for a drug, that exclusivity may not effectively protect the drug from competition because different drugs can be approved for the same condition, or the drug may be used off-label. Even after an orphan drug is approved, the FDA can subsequently approve another drug for the same condition if the FDA concludes that the other drug is clinically superior. In addition, a designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan designation. Moreover, orphan drug exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition. Orphan Drug Designation neither shortens the development time or regulatory review time of a drug nor gives the drug any advantage in the regulatory review or approval process. While we may seek Orphan Drug Designation for applicable indications for our current and future product candidates, we may never receive such designations. Even if we do receive such designations, there is no guarantee that we will enjoy the benefits of those designations.

The marketing approval process is expensive, time consuming and uncertain and may prevent us or any of our existing or future collaborators or licensees from obtaining approvals for the commercialization of our current and future product candidates.

Among other things, the research, testing, manufacturing, labeling, approval and license maintenance, selling, import and export, marketing and distribution of biologic products are subject to extensive regulation by the FDA and comparable foreign regulatory authorities. Neither we nor any existing or future collaborator or licensee is permitted to market any future product in the United States until we receive approval of a BLA from the FDA. We have never submitted an application for, or received, marketing approval. Obtaining approval of a BLA can be a lengthy, expensive and uncertain process. In addition, failure to comply with FDA and other applicable domestic and foreign regulatory requirements may subject us to administrative or judicially imposed sanctions, including the following:

- untitled and warning letters;
- civil or criminal penalties and fines;
- injunctions;
- suspension or withdrawal of marketing approval;
- suspension of any ongoing clinical trials;
- product recalls;
- refusal to accept or approve BLAs or supplements thereto filed by us;
- restrictions on operations, including costly new manufacturing requirements; or
- seizure or detention of our products or import bans.

Prior to receiving approval to commercialize our product candidates in the United States or abroad, we and any of our existing or future collaborators or licensees must demonstrate with substantial evidence from well-controlled clinical trials, and to the satisfaction of the FDA and comparable foreign regulatory authorities, that such product candidates are safe and effective for their intended uses. Even if we and any of our existing or future collaborators or licensees believe the preclinical or clinical data for our current and future product candidates are promising, such data may not be sufficient to support approval by the FDA and comparable foreign regulatory authorities. Administering our product candidates to humans may produce undesirable side effects, which could interrupt, delay or cause suspension of clinical trials of our product candidates and result in the FDA or other regulatory authorities denying approval of our current and future product candidates for any or all targeted indications.

Marketing approval of a BLA is not guaranteed, and the approval process is expensive and may take several years. The FDA also has substantial discretion in the approval process. Despite the time and expense exerted, failure can occur at any stage, and we could encounter problems that cause us to abandon or repeat clinical trials or perform additional preclinical studies and clinical trials. The number of preclinical studies and clinical trials that will be required for FDA approval varies depending on the product candidate, the disease or condition that the product candidate is designed to address and the regulations applicable to any particular product candidate. The FDA can delay, limit or deny approval of a product candidate for many reasons, including, but not limited to, the following:

- a product candidate may not be deemed safe or effective;
- FDA officials may not find the data from preclinical studies and clinical trials sufficient;
- the FDA might not deem our or our third-party manufacturers' processes or facilities adequate for approval of our marketing applications; or
- the FDA may change its approval policies or adopt new regulations.

If our current and future product candidates fail to demonstrate safety and efficacy in clinical trials or do not gain marketing approval, our business will be harmed.

We may choose not to develop a potential product candidate, or we may suspend or terminate one or more discovery or preclinical programs related to our product candidates.

At any time and for any reason, we may determine that one or more of our discovery programs, preclinical programs or product candidates does not have sufficient potential to warrant the allocation of resources toward such program or product candidate. Furthermore, because we have limited financial and personnel resources, we are placing significant focus on the development of our product candidates vopratelimab and JTX-4014. Accordingly, we may choose not to develop a product candidate or elect to suspend or terminate one or more of our discovery or preclinical programs. If we suspend or terminate a program or product candidate in which we have invested significant resources, we will have expended resources on a program or product candidate that will not provide a full return on our investment and we may have missed an opportunity to have allocated those resources to potentially more productive uses, including existing or future programs or product candidates. If we do not accurately evaluate the commercial potential or target market for a particular future product candidate, we may relinquish valuable rights to future product candidates through collaboration, licensing or other royalty arrangements.

Even if we complete the necessary clinical trials, we cannot predict when or if we will obtain marketing approval to commercialize a product or the approval may be for a narrower indication than we expect.

We cannot commercialize a product candidate until the appropriate regulatory authorities have reviewed and approved the product candidate. Even if our product candidates demonstrate safety and efficacy in clinical trials, the regulatory agencies may not complete their review processes in a timely manner, or we may not be able to obtain marketing approval. In addition, we may experience delays or rejections based upon government regulation or changes in regulatory agency policy during the period of product development. Regulatory agencies also may impose significant limitations in the form of narrow indications, warnings, precautions or contraindications with respect to conditions of use or may grant approval subject to the performance of costly post-marketing clinical trials or may not approve the price we intend to charge for our product candidates. Any of the foregoing scenarios could materially harm the commercial prospects for our current and future product candidates.

Obtaining and maintaining marketing approval of our current or future product candidates in one jurisdiction does not mean that we will be successful in obtaining marketing approval of that product candidate in other jurisdictions.

Obtaining and maintaining marketing approval of our current and future product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain marketing approval in any other jurisdiction. 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 the product candidate in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from, and greater than, those in the United States, including additional preclinical studies or clinical trials.

Obtaining foreign marketing 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 receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our current and future product candidates will be harmed. Even if we obtain approval for our product candidates and ultimately commercialize them in foreign markets, we would be subject to separate risks and uncertainties, including the burden of complying with complex and changing foreign regulatory, tax, accounting and legal requirements and the reduced protection of intellectual property rights in some foreign countries.

Our failure to successfully identify, discover, acquire, develop or commercialize additional products or product candidates could impair our ability to grow.

Although a substantial amount of our efforts will focus on the clinical testing and potential approval of our most advanced product candidates, vopratelimab and JTX-4014, an element of our long-term growth strategy is to in-license products or product candidates for development and commercialization. We may never be able to identify, discover, acquire, develop or commercialize any products or product candidates, which would have a material adverse effect on our business.

Because our internal research capabilities are limited, we may be dependent upon pharmaceutical and biotechnology companies, academic scientists, and other researchers to sell or license products or technology to us. The success of this strategy depends partly upon our ability to identify, select, and acquire promising pharmaceutical product candidates and products. The process of proposing, negotiating and implementing a license or acquisition of a product candidate or approved product is lengthy and complex. Other companies, including some with substantially greater financial, marketing and sales resources, may compete with us for the license or acquisition of product candidates and approved products. Acquisitions and in-licenses include numerous risks, including potential failure to achieve the expected benefits of the acquisition or license and potential unknown liabilities associated with the product or technology. We have limited resources to identify and execute the acquisition or in-licensing of third-party products, businesses, and technologies, integrate them into our current infrastructure and manage our development efforts.

Even if we receive marketing approval of our current or future product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review.

Any marketing approvals that we receive for our current and future product candidates may be subject to limitations on the approved indicated uses for which the product may be marketed or the conditions of approval or contain requirements for potentially costly post-market testing and surveillance to monitor the safety and efficacy of the product candidate. In addition, if the FDA or a comparable foreign regulatory authority approves any of our current or future product candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import and export and record keeping for our current and future product candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with current good manufacturing practice, or cGMP, and good clinical practice, or GCP, for any clinical trials that we conduct post-approval. Failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of our product candidates, withdrawal of the product from the market, or product recalls;
- fines, untitled and warning letters, or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications we filed 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.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, and we may not achieve or sustain profitability.

Even if our current and future product candidates receive marketing approval, they may fail to achieve the degree of market acceptance by physicians, patients, third-party payors and others in the medical community necessary for commercial success.

If our current and future product candidates receive marketing approval, whether as a single agent or in combination with other therapies, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, third-party payors, and others in the medical community. If our current and future product candidates do not achieve an adequate level of acceptance, we may not generate significant product revenues or receive significant milestone or royalty payments, and we may not become profitable.

Risks Related to Manufacturing, Commercialization and Reliance on Third Parties

We depend on Celgene to develop, manufacture and commercialize JTX-8064 and may depend on additional third parties for the development and commercialization of our other product candidate programs. If these programs are not successful, we may not receive significant payments from such third parties or we may not be able to capitalize on the market potential of these product candidates.

In July 2019, we entered into a License Agreement, or the Celgene License Agreement, with Celgene. Pursuant to the Celgene License Agreement, we granted Celgene an exclusive, worldwide license to develop, manufacture and commercialize JTX-8064. The license provides for potential payment to us from Celgene upon the achievement of specified clinical, regulatory and sales milestones, and potential royalty-based revenue if JTX-8064 is successfully commercialized. As a result of this license, we will not control the nature, timing or cost of bringing JTX-8064 to market. We cannot provide any assurance with respect to the success of the license. Moreover, in January 2019, Celgene and Bristol-Myers Squibb Company, or BMS, announced that they entered into an agreement under which Celgene will be acquired by BMS, subject to the satisfaction of customary closing conditions and regulatory approvals. Celgene and BMS have announced that the transaction is currently expected to close at the end of 2019 or the beginning of 2020. The acquisition of Celgene by BMS may result in a change in Celgene's business priorities, and as such, may lead to changes in its future operations, contracts and strategic plans, including those involving JTX-8064, and may have a material adverse effect on Celgene's development, manufacture or commercialization of JTX-8064. Any such change could affect Celgene's ability to retain and motivate key personnel who are important to the development of JTX-8064, reduce or terminate its efforts to develop, manufacture or launch JTX-8064, and/or cause the Celgene License Agreement to be terminated. If the transaction is completed as planned, there is no guarantee that BMS will place the same emphasis on the development of JTX-8064 as Celgene, and our business may be harmed. If the acquisition is consummated, BMS may elect to terminate the Celgene License Agreement and, any such termination may adversely affect our business and our stock price and make it more difficult for us to enter into a collaboration agreement or license with another party.

We may form or seek other strategic alliances, 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 current and future product candidates that we may develop.

Collaborations and other strategic transactions, including licensing arrangements, involving our product candidates pose the following risks to us:

- Collaborators, including licensors, have significant discretion in determining the efforts and resources that they will apply to these collaborations. For example, under the Celgene License Agreement, development and commercialization plans and strategies for JTX-8064 will be conducted by Celgene.
- Collaborators may not pursue development and commercialization of any of our current or future product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors such as a business combination that diverts resources or creates competing priorities.

- Collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial, abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing.
- Collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates.
- A collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to their marketing and distribution.
- Collaborators may own or co-own intellectual property covering our products that results from our collaborating with them, and in such cases, we would not have the exclusive right to develop, commercialize, enforce, maintain or defend such intellectual property.
- Collaborators may not properly enforce, maintain or defend our intellectual property rights or may use our 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 litigation, or other intellectual property proceedings. For example, Celgene has the exclusive right to enforce, maintain or defend our intellectual property rights for JTX-8064 under the Celgene License Agreement.
- Disputes may arise between a collaborator and us that cause the delay or termination of the research, development or commercialization of our current and future 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 to pursue further development or commercialization of the applicable product candidates.
- Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all.
- Collaboration or licensing agreements may restrict our right to independently pursue new product candidates. For example, until termination or expiration of the Celgene License Agreement, we may not directly or indirectly research, develop, manufacture or commercialize any antibody or biologic that is specifically directed to the LILRB2 receptor.

As a result, if we enter into additional collaboration agreements and strategic partnerships or license our intellectual property, products or businesses, we may not be able to realize the benefit of, or generate revenues from, such arrangements.

If we establish one or more licenses or collaborations, all of the risks relating to product development, regulatory approval and commercialization described in this Quarterly Report on Form 10-Q would also apply to the activities of any such future licensees or collaborators.

We may seek to establish additional collaborations, and, if we are not able to establish them on commercially reasonable terms, we may have to alter our development and commercialization plans.

Our drug development programs and the potential commercialization of our product candidates will require substantial additional resources. For some of our product candidates, we may decide to collaborate with additional pharmaceutical and biotechnology companies for the development and potential commercialization of those product candidates. 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.

We face significant competition in seeking appropriate strategic partners and the negotiation process is time consuming and complex. Whether we reach a definitive agreement for other collaborations will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of our business. We may not be successful in our efforts to establish a strategic partnership or other alternative arrangements for future product candidates because they may be deemed to be at too early of a stage of development for collaborative effort and third parties may not view them as having the requisite potential to demonstrate safety and efficacy. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators.

We may also be restricted under existing agreements from entering into future agreements on certain terms with potential collaborators. For example, under the Celgene License Agreement, we have granted worldwide exclusive rights to Celgene for any antibody or biologic that is specifically directed to the LILRB2 receptor, and during the term

of the agreement we will be restricted from granting similar rights to other parties. This exclusivity could limit our ability to enter into strategic collaborations with future collaborators.

We may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of the product candidate for which we are seeking to collaborate, reduce or delay its development program, delay or reduce the scope of potential commercialization activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all.

The market opportunities for our current and future products, if and when approved, may be limited to those patients who are ineligible for established therapies or for whom prior therapies have failed, 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, usually chemotherapy, hormone therapy, surgery, radiation therapy, and, increasingly, immunotherapies or a combination of these, is sometimes adequate to cure the cancer or prolong life without a cure. Second and third-line therapies are administered to patients when prior therapy is not effective. We expect to initially seek approval of our current and future product candidates as a therapy for patients who have received one or more prior treatments. Subsequently, for those products that prove to be sufficiently beneficial, if any, we would expect to seek approval potentially as a first-line therapy, but there is no guarantee that any of our product candidates, even if approved, would be approved for first-line therapy, and, prior to any such approvals, we may have to conduct additional clinical trials.

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 who have received one or more prior treatments, and who have the potential to benefit from treatment with our current and future product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, and market research, and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these cancers. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our current and future product candidates may be limited or may not be amenable to treatment with any of our products, if and when approved. Even if we obtain significant market share for any of our products, if and when approved, because the potential target populations may be small, we may never achieve profitability without obtaining marketing approval for additional indications, including to be used as first- or second-line therapy.

We rely and expect to continue to rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties, comply with regulatory requirements or meet expected deadlines, we may not be able to obtain marketing approval for or commercialize our product candidates and our business could be substantially harmed.

We do not have the ability to independently conduct clinical trials. We rely and will rely on medical institutions, clinical investigators, contract laboratories, and other third parties, such as CROs, to conduct or otherwise support our ongoing clinical trials, including processing of human blood and tumor samples and analysis of biomarkers from the clinical trials. We rely and will rely heavily on these parties for execution of clinical trials for our current and future product candidates and we control only certain aspects of their activities. Nevertheless, we are responsible for ensuring that each of our clinical trials is conducted in accordance with the applicable protocol, legal and regulatory requirements and scientific standards, and our reliance on these third parties including CROs will not relieve us of our regulatory responsibilities. For any violations of laws and regulations during the conduct of our clinical trials, we could be subject to untitled and warning letters or enforcement action that may include civil penalties up to and including criminal prosecution.

We and our clinical investigators and CROs are required to comply with regulations and requirements, including GCP, for conducting, monitoring, recording and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate, and that the trial patients are adequately informed of the potential risks of participating in clinical trials and their rights are protected. If we or our clinical investigators or CROs fail to comply with applicable GCP, 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 clinical trials before approving our marketing applications. We cannot assure stockholders that, upon inspection, the FDA will determine that any of our future clinical trials will comply with GCP. In addition, our clinical trials must be conducted with product candidates produced under cGMP regulations. Our failure or the failure of our clinical investigators or CROs to comply with these regulations may require us to repeat clinical trials, which would delay the marketing approval process and could also subject us to

enforcement action. We also are required to register certain ongoing clinical trials and provide certain information, including information relating to the trial's protocol, on a government-sponsored database, ClinicalTrials.gov, within specific time frames. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

Although we designed the clinical trials for vopratelimab and JTX-4014 and intend to design the clinical trials for future product candidates, clinical investigators or CROs will conduct all of the clinical trials. As a result, many important aspects of our development programs, including their conduct and timing, will be outside of our direct control. Our reliance on third parties to conduct future clinical trials will also result in less direct control over the management of data developed through clinical trials than would be the case if we were relying entirely upon our own staff. Communicating with outside parties can be challenging, potentially leading to mistakes as well as difficulties in coordinating activities. Outside parties may also face internal challenges that may materially adversely affect the willingness or ability of such parties to conduct our clinical trials and may subject us to unexpected cost increases that are beyond our control. If the clinical investigators or CROs do not perform clinical trials in a satisfactory manner, breach their obligations to us or fail to comply with regulatory requirements, the development, marketing approval and commercialization of our current and future product candidates may be delayed, or our development program may be materially and irreversibly harmed. If we are unable to rely on clinical data collected by our clinical investigators and CROs, we could be required to repeat, extend the duration of, or increase the size of any clinical trials we conduct, and this could significantly delay commercialization and require significantly greater expenditures.

If clinical investigators or CROs 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 are compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, any clinical trials such clinical investigators or CROs are associated with may be extended, delayed or terminated. As a result, we believe that our financial results and the commercial prospects for our current and future product candidates in the subject indication would be harmed, our costs could increase and our ability to generate revenue could be delayed.

We face significant competition and if our competitors develop and market products that are more effective, safer or less expensive than any of our current or future product candidates, our commercial opportunities will be negatively impacted.

The life sciences industry is highly competitive and subject to rapid and significant technological change. We are currently developing therapeutics that will compete with other products and therapies that currently exist or are being developed, such as approved immunotherapy antibodies, the anti-ICOS antibodies of BMS, GlaxoSmithKline plc, or Kymab Group Ltd. or Xenor, Inc.'s anti-PD-1 and anti-ICOS bispecific antibody. Products we may develop in the future are also likely to face competition from other products and therapies, some of which we may not currently be aware. Technological advances or products developed by our competitors may render our technologies or product candidates obsolete, less competitive or not economical.

We have both domestic and international competitors, including major multinational pharmaceutical companies, established biotechnology companies, specialty pharmaceutical companies, universities and other research institutions and small and other early-stage companies. Many of our competitors have significantly greater financial, manufacturing, marketing, product development, technical and human resources than we do. Large pharmaceutical companies, in particular, have extensive experience in clinical testing, obtaining marketing approvals, establishing clinical trial sites, recruiting patients and in manufacturing pharmaceutical products and may succeed in discovering, developing and commercializing products in our field before we do. We also face competition in recruiting and retaining qualified scientific and management personnel, as well as in acquiring technologies complementary to, or necessary for, our programs.

There are a large number of companies developing or marketing treatments for cancer, including many major pharmaceutical and biotechnology companies. These treatments consist both of small molecule drug products, as well as biologics approaches to address cancer. These treatments are often combined with one another in an attempt to maximize the response rate.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient, have a broader label, are marketed more effectively, are reimbursed or are less expensive than any products that we may develop. Our competitors also may obtain FDA, European Commission or other marketing approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. Even if our current and future product candidates achieve marketing approval, they may be priced at a significant premium over competitive products, resulting in reduced competitiveness. In addition,

if any of our current or future product candidates are approved by the FDA, the approval of a biosimilar product to one of our products could have a material impact on our business.

Because we rely on third-party manufacturing and supply partners, including a single supplier for some of our materials, our supply of research and development, preclinical and clinical development materials may become limited or interrupted or may not be of satisfactory quantity or quality.

We rely on third-party contract manufacturers to manufacture our preclinical and clinical trial product supplies. We do not own manufacturing facilities for producing such supplies. There can be no assurance that our preclinical and clinical development product supplies will not be limited, interrupted, or of satisfactory quality or continue to be available at acceptable prices. Our or a third party's failure to execute on our manufacturing requirements, or to do so on commercially reasonable terms and comply with cGMP could adversely affect our business in a number of ways, including:

- an inability to initiate or continue clinical trials of our current or future product candidates under development;
- delay in submitting regulatory applications, or receiving marketing approvals, for our current or future product candidates;
- loss of cooperation of an existing or future collaborator;
- subjecting third-party manufacturing facilities or our manufacturing facilities to additional inspections by regulatory authorities; and
- requirements to cease distribution or to recall batches of our current or future product candidates.

In the event that any of our manufacturers fails to comply with applicable regulatory requirements and facility and process validation tests or to perform its obligations to us in relation to quality, timing or otherwise, or if our supply of components or other materials becomes limited or interrupted for other reasons, we may be forced to manufacture the materials ourselves, for which we currently do not have the capabilities or resources, or enter into an agreement with another third party, which we may not be able to do on reasonable terms, if at all. In some cases, the technical skills or technology required to manufacture our future product candidates may be unique or proprietary to the original manufacturer, which would increase our reliance on such manufacturer or require us to obtain a license from such manufacturer in order to have another third party manufacture such future product candidates. In particular, any replacement of our manufacturer could require significant effort and expertise because there may be a limited number of qualified replacements. If we are required to change manufacturers for any reason, we will be required to verify that the new manufacturer maintains facilities and procedures that comply with quality standards and with all applicable regulations and guidelines, which could negatively affect our ability to develop product candidates in a timely manner or within budget.

Certain raw materials necessary for the manufacture of our product candidates under our current manufacturing process, such as growth media, resins and filters, are available from a single supplier. We do not have agreements in place that guarantee our supply or the price of these raw materials. Any significant delay in the acquisition or decrease in the availability of these raw materials could considerably delay the manufacture of our current and future product candidates, which could adversely impact the timing of any planned trials or the marketing approval of that product candidate.

We expect to continue to rely on third-party manufacturers if we receive marketing approval for any product candidate. If we are unable to maintain third-party manufacturing for vopratelimab or JTX-4014 or obtain or maintain third-party manufacturing for other future product candidates, or to do so on commercially reasonable terms, we may not be able to develop and commercialize our current or future product candidates successfully. We do not yet have sufficient information to reliably estimate the cost of the commercial manufacture of any future product candidate.

In addition, in order to conduct clinical trials of our current and future product candidates, we will need to work with third-party manufacturers to manufacture them in large quantities. Our manufacturing partners or our third-party collaborators may be unable to successfully increase the manufacturing capacity of our current and future product candidates in a timely or cost-effective manner, or at all. In addition, quality issues may arise during scale-up activities. If our manufacturing partners or collaborators are unable to successfully scale up the manufacture of our current or future product candidates in sufficient quality and quantity, the development, testing, and clinical trials of that product candidate may be delayed or infeasible, and marketing approval or commercial launch of any resulting product may be delayed or not obtained, which could significantly harm our business.

We are subject to manufacturing risks that could substantially increase our costs and limit the supply of our products.

The process of manufacturing our current or future product candidates is complex, highly regulated and subject to several risks, including:

- We do not have the capability internally to manufacture drug products or drug substances for clinical use. We use third-party manufacturers for manufacturing vopratelimab and JTX-4014 for our on-going and anticipated clinical trials. Any changes in our manufacturing processes as a result of scaling-up may require additional approvals or may delay the development and marketing approval of our current and future product candidates and ultimately affect our success.
- The manufacturing facilities in which our current and future product candidates are made could be adversely affected by equipment failures, contamination, vendor error, labor shortages, natural disasters, power failures and numerous other factors.
- Any adverse developments affecting manufacturing operations for our current or future product candidates, if any are approved, may result in shipment delays, inventory shortages, lot failures, product withdrawals or recalls, or other interruptions in the supply of our products. We may also have to take inventory write-offs and incur other charges and expenses for products that fail to meet specifications, undertake costly remediation efforts or seek more costly manufacturing alternatives.
- Biologics, such as vopratelimab and JTX-4014, that have been produced and are stored for later use may degrade, become contaminated, suffer other quality defects or may not be used within their shelf life, which may cause the affected product candidates to no longer be suitable for their intended use in clinical trials or other development activities. If the defective product candidates cannot be replaced in a timely fashion, we may incur significant delays in our development programs that could adversely affect the value of such product candidates.

We expect to develop our current and future product candidates in combination with other drugs. If we are unable to enter into a strategic collaboration for, or if we are unable to purchase on commercially reasonable terms, an approved cancer drug to use in combination with our product candidates, we may be unable to develop or obtain approval for our current and future product candidates in combination with other drugs.

We intend to develop our current and future product candidates in combination with one or more other cancer drugs. If the FDA or similar regulatory authorities outside of the United States revoke or do not grant approval of any drugs we use in combination with our current or future product candidates, we will not be able to market any products in combination with such drugs.

If safety or efficacy issues arise with any of these drugs, we could experience significant regulatory delays, and the FDA or similar regulatory authorities outside of the United States may require us to redesign or terminate the applicable clinical trials. If the drugs we use are replaced as the standard of care for the indications we choose for our current or future product candidates, the FDA or similar regulatory authorities outside of the United States may require us to conduct additional clinical trials. In addition, if manufacturing or other issues result in a shortage of supply of the drugs with which we determine to combine with our current or future product candidates, we may not be able to complete clinical development of vopratelimab, JTX-4014 or future product candidates on our current timeline or at all.

Even if our current or future product candidates were to receive marketing approval or be commercialized for use in combination with other existing drugs, we would continue to be subject to the risks that the FDA or similar regulatory authorities outside of the United States could revoke approval of such existing drugs or that safety, efficacy, manufacturing or supply issues could arise with such drugs.

We may form or seek strategic collaborations to evaluate and, if approved, market vopratelimab and JTX-4014 in combination with another approved cancer drug. If we are unable to enter into a strategic collaboration on commercially reasonable terms or fail to realize the benefits of any such collaboration, we may be required to purchase an approved cancer drug to use in combination with vopratelimab and JTX-4014. The failure to enter into a successful collaboration or the expense of purchasing an approved cancer drug may delay our development timelines, increase our costs and jeopardize our ability to develop vopratelimab and JTX-4014.

We may develop complementary diagnostics and/or companion diagnostics for our current and future product candidates. If we are unable to successfully develop such companion diagnostics or complementary diagnostics, or experience significant delays in doing so, we may not realize the full commercial potential of our current or future product candidates.

Because we are focused on patient enrichment strategies, in which predictive biomarkers may be used to identify the right patients for our product candidates, we believe that our success may depend, in part, on our ability to develop complementary diagnostics and/or companion diagnostics, which are assays or tests to identify an appropriate patient population for our product candidates. There has been limited success to date industry-wide in developing these types of complementary diagnostics and/or companion diagnostics. To be successful, we need to address a number of scientific, technical and logistical challenges. We have not yet initiated development of complementary diagnostics and/or companion diagnostics, and the process of obtaining or creating such a diagnostic is time consuming and costly. We have little experience in the development of diagnostics and may not be successful in developing appropriate diagnostics to pair with any of our product candidates that receive marketing approval. Complementary diagnostics and/or companion diagnostics are subject to regulation by the FDA and similar regulatory authorities outside the United States as medical devices and require separate regulatory approval or clearance prior to commercialization. Given our limited experience in developing diagnostics, we expect to rely in part or in whole on third parties for their design and manufacture. If we are unable to engage a third party to assist us, or if we, or any third parties that we engage, are unable to successfully develop complementary diagnostics and/or companion diagnostics for our current and future product candidates, or experience delays in doing so:

- the development of our current and future product candidates may be adversely affected if we are unable to appropriately select patients for enrollment in our clinical trials;
- our current and future product candidates may not receive marketing approval if safe and effective use of a product candidate depends on complementary diagnostics and/or companion diagnostics and such a diagnostic is not commercially available or otherwise approved or cleared by the appropriate regulatory authority; and
- we may not realize the full commercial potential of our current and future product candidates that receive marketing approval if, among other reasons, we are unable to appropriately identify, or it takes us longer to identify, patients who are likely to benefit from therapy with our products, if approved.

If any of these events were to occur, our business would be harmed, possibly materially.

If product liability lawsuits are brought against us, we may incur substantial liabilities.

We face an inherent risk of product liability as a result of the clinical testing of our current and future product candidates. 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. 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 product candidates;
- injury to our reputation;
- withdrawal of clinical trial participants;
- 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.

Insurance coverage is increasingly expensive. We may not be able to maintain insurance at a reasonable cost or in an amount adequate to satisfy any liability that may arise, if at all. Our insurance policy contains 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.

Adverse events in the field of immuno-oncology could damage public perception of our product candidates and negatively affect our business.

The commercial success of our products will depend in part on public acceptance of the use of cancer immunotherapies. Adverse events in clinical trials of any of our current or future product candidates or other similar products and the resulting publicity, as well as any other adverse events in the field of immuno-oncology that may occur, including in connection with competitor therapies such as approved immunotherapy antibodies, the anti-ICOS antibodies of BMS, GlaxoSmithKline plc or Kymab Group Ltd. or Xenor, Inc.'s anti-PD-1 and anti-ICOS bispecific antibody, could result in a decrease in demand for vopratelimab, JTX-4014 or other products that we may develop. If public perception is influenced by claims that the use of cancer immunotherapies is unsafe, whether related to our or our competitors' therapies, our products may not be accepted by the general public or the medical community.

Future adverse events in immuno-oncology or the biopharmaceutical industry could also result in greater governmental regulation, stricter labeling requirements and potential regulatory delays in the testing or approvals of our products. Any increased scrutiny could delay or increase the costs of obtaining marketing approval for our current and future product candidates.

Healthcare legislative reform measures may have a material adverse effect on our business and results of operations.

In the United States, there have been and continue to be a number of legislative initiatives to contain healthcare costs. For example, in March 2010, the Affordable Care Act was passed, which substantially changes the way health care is financed by both governmental and private insurers, and significantly impacts the U.S. pharmaceutical industry.

We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our product candidates or complementary diagnostics or companion diagnostics or additional pricing pressures.

For example, with enactment of the Tax Cuts and Jobs Act of 2017, which was signed by the President on December 22, 2017, Congress repealed the "individual mandate." The repeal of this provision, which requires most Americans to carry a minimal level of health insurance, will become effective in 2019. According to the Congressional Budget Office, the repeal of the individual mandate will cause 8.67 million fewer Americans to be insured in 2027 and premiums in insurance markets may rise. Further, each chamber of the Congress has put forth multiple bills designed to repeal or repeal and replace portions of the Affordable Care Act, or ACA. Although none of these measures has been enacted by Congress to date, Congress may consider other legislation to repeal and replace elements of the ACA.

Further, on December 14, 2018, a U.S. District Court judge in the Northern District of Texas ruled that the individual mandate portion of the ACA is an essential and inseverable feature of the ACA, and therefore because the mandate was repealed as part of the Tax Cuts and Jobs Act, the remaining provisions of the ACA are invalid as well. The Trump administration and CMS have both stated that the ruling will have no immediate effect, and on December 30, 2018 the same judge issued an order staying the judgment pending appeal. The Trump administration has represented to the US Court of Appeals for the Fifth Circuit considering this judgment that it does not oppose the lower court's ruling. To that end, on May 1, 2019, the Justice Department filed a brief asking the Court to strike down the entirety of the ACA. Thereafter, on July 10, 2019, the Court of Appeals for the Fifth Circuit heard oral argument in this case. In those arguments, the Trump administration argued in support of upholding the lower court decision. Litigation and legislation over the ACA are likely to continue, with unpredictable and uncertain results.

The current administration has also taken executive actions to undermine or delay implementation of the ACA. In January 2017, the President signed an Executive Order directing federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers

of pharmaceuticals or medical devices. In October 2017, the President signed a second Executive Order allowing for the use of association health plans and short-term health insurance, which may provide fewer health benefits than the plans sold through the ACA exchanges. At the same time, the Administration announced that it will discontinue the payment of cost-sharing reduction, or CSR, payments to insurance companies until Congress approves the appropriation of funds for such CSR payments. The loss of the CSR payments is expected to increase premiums on certain policies issued by qualified health plans under the ACA.

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

Our future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. In addition, we may be subject to transparency laws and patient privacy regulation by the U.S. federal and state governments and by governments in foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws and regulations that may affect our ability to operate include the federal Anti-Kickback Statute, the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, the federal legislation commonly referred to as the Physician Payments Sunshine Act, and analogous state and foreign laws and regulations, any of which may constrain the business or financial arrangements and relationships through which we sell, market and distribute any products for which we obtain marketing approval.

Because of the breadth of these laws and the narrowness of the statutory exceptions and regulatory safe harbors available under such laws, it is possible that some of our business activities could be subject to challenge under one or more of such laws. The scope and enforcement of each of these laws is also uncertain and any investigation or settlement could be time- and resource-consuming, divert management's attention, increase our costs or otherwise have an adverse effect on our business.

If our operations are found to be in violation of any of the laws described above or any other government regulations that apply to us, we may be subject to various significant penalties, any of which could harm our ability to operate our business and our financial results. In addition, the approval and commercialization 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 our Financial Position and Need for Additional Capital

We have incurred net losses in every year since our inception and anticipate that we will continue to incur substantial net losses in the foreseeable future.

We are a clinical-stage biopharmaceutical company with a limited operating history, and we are early on in our development efforts. Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate effect or an acceptable safety profile, gain marketing approval and become commercially viable. We have financed our operations primarily through the sale of equity securities and our collaboration with Celgene. Since our inception, most of our resources have been dedicated to the preclinical and clinical development of vopratelimab, JTX-4014 and JTX-8064 and the preclinical and planned clinical development of other future product candidates and discovery programs. The size of our future net losses will depend, in part, on our future expenses and our ability to generate additional revenue, if any. We have no products approved for commercial sale and have not generated any revenue from product sales to date, and we continue to incur significant research and development and other expenses related to our ongoing operations. As a result, we have incurred losses in each annual period since our inception. For the years ended December 31, 2018 and 2017, we reported net losses of $27.4 million and $16.4 million, respectively. For the six months ended June 30, 2019, we reported a net loss of $19.4 million. As of June 30, 2019, we had an accumulated deficit of $183.4 million. We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase as we continue our research and development of, and seek marketing approvals for our current and future product candidates.

Even if we succeed in receiving marketing approval for and commercialize our product candidates, we will continue to incur substantial research and development and other expenditures to develop and market additional potential products. 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 stockholders' equity and working capital.

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

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

- completing clinical development of vopratelimab and JTX-4014, and research, discovery, preclinical and clinical development of future product candidates;
- obtaining marketing approvals for our current and future product candidates for which we complete clinical trials;
- developing a sustainable and scalable manufacturing process for our product candidates, including establishing and maintaining commercially viable supply and manufacturing relationships with third parties;
- launching and commercializing our product candidates for which we obtain marketing approvals, either directly or with a collaborator or distributor;
- obtaining market acceptance of our current and future product candidates as viable treatment options;
- addressing any competing technological and market developments;
- identifying, assessing, acquiring and developing new product candidates;
- negotiating favorable terms in any collaboration, licensing, or other arrangements into which we may enter;
- obtaining, 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 our product candidates or other future product candidates that we develop are approved for commercial sale, we anticipate incurring significant costs associated with commercializing any approved product candidate. These costs may fluctuate or exceed our expectations and our revenues will depend on many factors that we cannot control or estimate. If we are not able to generate revenue from the sale of any approved products, we may never become profitable.

We will require substantial additional financing to achieve our goals, and a failure to obtain this necessary capital when needed could force us to delay, limit, reduce or terminate our product development or commercialization efforts.

Our operations have consumed substantial amounts of cash since inception. As of June 30, 2019, our cash, cash equivalents and investments were $152.0 million. We expect to continue to spend substantial amounts to continue the clinical development of vopratelimab and JTX-4014 and preclinical and clinical development of future product candidates. If we are able to gain marketing approval for any of our product candidates, we will require significant additional amounts of cash in order to launch and commercialize those product candidates to the extent that such launch and commercialization are not the responsibility of a collaborator or a licensee. In addition, other unanticipated costs may arise. Because the design and outcome of our planned and anticipated clinical trials are highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of our current and future product candidates. Our future capital requirements depend on many factors, including:

- the scope, progress, results and costs of researching and developing our product candidates, and conducting preclinical studies and clinical trials;
- the timing of, and the costs involved in, obtaining marketing approvals for our product candidates if clinical trials are successful;
- the cost of commercialization activities for our product candidates, that are approved for sale, including marketing, sales and distribution costs;

- the cost of manufacturing our product candidates for clinical trials in preparation for marketing approval and in preparation for commercialization;
- our ability to establish and maintain strategic licensing or other arrangements and the financial terms of such agreements;
- the costs involved in preparing, filing, prosecuting, maintaining, expanding, defending and enforcing patent claims, including litigation costs and the outcome of such litigation;
- the timing, receipt, and amount of sales of, or royalties on, our future products, if any;
- the emergence of competing cancer therapies and other adverse market developments; and
- the requirement for and cost of developing complementary diagnostics and/or companion diagnostics.

Until we can generate sufficient product and royalty revenue to finance our cash requirements, which we may never do, we expect to finance our future cash needs through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing or distribution arrangements. Based on our research and development plans, we expect that our existing cash, cash equivalents and investments of $152.0 million as of June 30, 2019, combined with the $50.0 million upfront payment subsequently received from Celgene in July 2019 pursuant to the Celgene License Agreement, will enable us to fund our operating expenses and capital expenditure requirements into the second half of 2021.

If we are unable to obtain adequate financing on favorable terms when needed, we may have to delay, reduce the scope of or suspend one or more of our clinical trials or research and development programs or our commercialization efforts.

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

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of private and public equity offerings, debt financings, collaborations, strategic alliances and licensing arrangements. To the extent that we raise additional capital through the sale of common stock or securities convertible or exchangeable into common stock, stockholders' ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect our stockholders' rights. Debt financing, if available, would increase our fixed payment obligations and may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

If we are unable to raise additional funds through equity or debt financings when needed, and instead raise additional capital through marketing and distribution agreements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish certain valuable rights to our current and future product candidates, technologies, future revenue streams or discovery programs or grant licenses on terms that may not be favorable to us.

Risks Related to Intellectual Property

If we are unable to obtain, maintain and protect our intellectual property rights for our product candidates or if our intellectual property rights are inadequate, our competitive position could be harmed.

Our commercial success will depend in part on our ability to obtain and maintain patent and other intellectual property protection in the United States and other countries with respect to our product candidates. We rely on trade secret, patent, copyright and trademark laws, and confidentiality, licensing and other agreements with employees and third parties, all of which offer only limited protection. We currently, or will in the future, seek to protect our proprietary position by filing and prosecuting patent applications in the United States and abroad related to our current and future product candidates, and any future novel technologies that are important to our business.

The steps we, our licensees or our licensors have taken to protect our proprietary rights may not be adequate to preclude misappropriation of our proprietary information or infringement of our intellectual property rights, both inside and outside of the United States.

If we, our licensees or our licensors are unable to obtain and maintain patent protection for our current and future product candidates, or if the scope of the patent protection obtained is not sufficient, our competitors could develop

and commercialize products similar or superior to ours, and our ability to successfully commercialize our current and future product candidates and future technologies may be adversely affected.

Our pending applications cannot be enforced against third parties unless and until a patent issues from such applications and, even after issuance, such patents may be challenged in the courts or patent offices in the United States and abroad. Such proceedings may result in the loss of patent protection, the narrowing of claims in such patents or the invalidity or unenforceability of such patents, which could limit our ability to stop others from using or commercializing similar or identical products or limit the duration of the patent protection for our current and future product candidates. In addition, we cannot predict whether any of our future patent applications will result in the issuance of patents that effectively protect our current and future product candidates, or if any of our issued patents or if any of our licensor's issued patents will effectively prevent others from commercializing competitive products. In some cases, it may be difficult or impossible to detect third-party infringement or misappropriation of our intellectual property rights, even in relation to issued patent claims, and proving any such infringement may be even more difficult. If we are unable to obtain, maintain, and protect our intellectual property our competitive advantage could be harmed, and it could result in a material adverse effect on our business, financial condition, and the results of operations and prospects.

Patent terms may be inadequate to protect our competitive position on our products for an adequate amount of time, and our current and future product candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated.

Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. We expect to seek patent term extensions of patent terms in the United States for our issued patents, licensed patents and any patents we own in the future and, if available, in other countries where that may be available when we are prosecuting patents. In the United States, the Drug Price Competition and Patent Term Restoration Act of 1984 permits a patent term extension of up to five years beyond the normal expiration of the patent, which is limited to the approved indication. However, the applicable authorities, including the FDA and the United States Patent and Trademark Office, or USPTO, in the United States, and any equivalent regulatory authority in other countries, may not agree with our assessment of whether such extensions are available, and may refuse to grant extensions to our patents, or may grant more limited extensions than we request. We may not be granted an extension because of, for example, failure to exercise due diligence during the testing phase or regulatory review process, failure to apply within applicable deadlines, failure to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. If we are unable to obtain patent term extension or the term of any such extension is less than we request, our competitors may be able to take advantage of our investment in development and clinical trials by referencing our clinical and preclinical data and launch their product earlier than might otherwise be the case, which could result in a material adverse effect on our business, financial condition, results of operation and prospects.

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, established legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an existing brand product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. 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 intend to seek market exclusivity for our biological product candidates that is subject to its own BLA for 12 years in the United States, 10 years in Europe and other durations in other markets. However, the term of the patents that cover such product candidates may not extend beyond the applicable market exclusivity awarded by a particular country. For example, in the United States, if all of the patents that cover our particular biologic product expire before the 12-year market exclusivity expires, a third party could submit a marketing application for a biosimilar product four years after approval of our biologic product, and the FDA could immediately review the application and approve the biosimilar product for marketing 12 years after approval of our biologic. Alternatively, a third party could submit a BLA for a similar or identical product any time after approval of our biologic product, and the FDA could immediately review and approve the similar or identical product for marketing and the third party could begin marketing the similar or identical product upon expiry of all of the patents that cover our particular biologic product.

Additionally, there is a risk that this exclusivity could be shortened due to congressional action, potentially creating the opportunity for biosimilar competition sooner than anticipated. 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.

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

In addition to seeking patent protection, we also rely on other proprietary rights, including protection of trade secrets, know-how and confidential and proprietary information. To maintain the confidentiality of our trade secrets and proprietary information, we enter into confidentiality agreements with our employees, consultants, collaborators and other third parties who have access to our trade secrets. These agreements require that all confidential information developed by the individual or made known to the individual by us during the course of the individual's relationship with us be kept confidential and not disclosed to third parties. Our agreements with employees also provide that any inventions conceived by the individual in the course of rendering services to us shall be our exclusive property. However, we may not obtain these agreements in all circumstances, and individuals with whom we have these agreements may not comply with their terms. The assignment of intellectual property rights may not be self-executing or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. In addition, in the event of unauthorized use or disclosure of our trade secrets or proprietary information, these agreements, even if obtained, may not provide meaningful protection, particularly for our trade secrets or other confidential information.

Adequate remedies may not exist in the event of unauthorized use or disclosure of our confidential information. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive, and time consuming, and the outcome is unpredictable. In addition, some courts are less willing or unwilling to protect trade secrets. The disclosure of our trade secrets or the independent development of our trade secrets by a competitor or other third party would impair our competitive position and may materially harm our business, financial condition, results of operations and prospects.

Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could harm our business.

Our commercial success depends on our ability and the ability of our current or future licensees or collaborators to develop, manufacture, market and sell our product candidates, and to use our related proprietary technologies without infringing, misappropriating or otherwise violating the intellectual property and proprietary rights of third parties. The biotechnology and pharmaceutical industries are characterized by extensive litigation regarding patents and other intellectual property rights. We may become party to, or threatened with, adversarial proceedings or litigation regarding intellectual property rights with respect to our current and future product candidates. For example, we are aware of third-party patents generally directed to methods of treating certain indications with an anti-PD-1 monoclonal antibody and/or an anti-ICOS monoclonal antibody that may be construed to cover one or more of our current and future product candidates. If we are found to infringe a third-party's intellectual property rights, and we are unsuccessful in demonstrating that such intellectual property rights are invalid or unenforceable, we could be required to obtain a license from such third party to continue developing, manufacturing and commercializing our product candidates. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors and other third parties access to the same technologies licensed to us, and it could require us to make substantial licensing and royalty payments. We also could be forced, including by court order, to cease developing, manufacturing, and commercializing our product candidates. In addition, in any such proceeding or litigation, we could be found liable for significant monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent or other intellectual property right. Additionally, under the Celgene License Agreement, if Celgene is required to obtain a right or a license for intellectual property from a third party for the development, manufacturing or commercialization of JTX-8064, Celgene may deduct payments for such right or license from any royalties payable to us, up to an aggregate minimum floor. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

Furthermore, we are testing vopratelimab and JTX-4014 and expect to test our future product candidates with other products that are covered by patents held by other companies or institutions. In the event that a labeling instruction is required in product packaging recommending that combination, we could be accused of, or held liable for, infringement of the third-party patents covering the product candidate or product recommended for administration with our product candidates. In such a case, we could be required to obtain a license from the other company or institution to use the required or desired package labeling, which may not be available on commercially reasonable terms, or at all.

If we breach any of our license agreements or collaboration agreements, it could have a material adverse effect on our commercialization efforts for our product candidates.

Our commercial success depends on our ability, and at times, the ability of our licensors and current or future licensees and collaborators to develop, manufacture, market, and sell our product candidates, and use our licensors proprietary technologies without infringing the property rights of third parties. For example, we have entered into an exclusive license agreement with Sloan Kettering Institute for Cancer Research, Memorial Sloan Kettering Cancer Center and Memorial Hospital for Cancer and The University of Texas MD Anderson Cancer Center related to certain uses of our vopratelimab, and we may enter into additional licenses in the future. These and other licenses may not provide exclusive rights to use such intellectual property and technology in all relevant fields of use and in all territories in which we may wish to develop or commercialize our products in the future. As a result, we may not be able to prevent competitors from developing and commercializing competitive products in territories included in all our licenses.

In addition, we may not have the right to control the preparation, filing, prosecution, maintenance, enforcement and defense of patents and patent applications covering the technology that we license to or from third parties. For example, under our Celgene License Agreement, Celgene has the exclusive right to enforce, maintain or defend our intellectual property rights with respect to JTX-8064. Therefore, we cannot be certain that these patents and patent applications will be prepared, filed, prosecuted, maintained, enforced, and defended in a manner consistent with the best interests of our business. If Celgene or any other of our licensors fail to prosecute, maintain, enforce and defend such patents, or lose rights to those patents or patent applications, the rights we have licensed may be reduced or eliminated and our right to develop and commercialize our product candidates that are the subject of such licensed rights could be adversely affected. Furthermore, our owned and in-licensed patents may be subject to a reservation of rights by one or more third parties.

Certain of our license agreements also require us to meet development thresholds to maintain the license, including establishing a set timeline for developing and commercializing products. If we fail to comply with the obligations under our license agreements, including payment and diligence terms, our licensors may have the right to terminate our agreements. Such an occurrence could materially adversely affect the value of the product candidate being developed under any such agreement. Termination of our license agreements or reduction or elimination of our rights under them may result in our having to negotiate a new or reinstated agreement, which may not be available to us on equally favorable terms, or at all.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates, which could have a material adverse effect on our business, financial conditions, results of operations and prospects.

Further, the resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

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

We currently have rights to intellectual property, through licenses from third parties, for certain uses of vopratelimab. Because our current and future product candidates may require the use of proprietary rights held by third parties, the growth of our business likely will depend, in part, on our ability to acquire, in-license or use these proprietary rights. We may be unable to acquire or in-license any compositions, methods of use, processes or other intellectual property rights from third parties that we identify as necessary for our current and future product candidates. The licensing or acquisition of third-party intellectual property rights is a competitive area, and several more established companies may pursue strategies to license or acquire third-party intellectual property rights that we may consider attractive. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities.

If we are unable to successfully obtain required third-party intellectual property rights or maintain the existing intellectual property rights we have, we may have to abandon or alter our plans for the development or commercialization of the relevant program or product candidate, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

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

Filing, prosecuting and defending patents on our current and future product candidates throughout the world would be prohibitively expensive, and intellectual property rights in some countries outside the United States can be less extensive than those in the United States.

Many companies have encountered significant problems in protecting and defending intellectual property rights in certain foreign jurisdictions. Any efforts to enforce our intellectual property and proprietary rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property we develop or license.

Moreover, many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. If we or any of our licensors is forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business and results of operations may be adversely affected.

Generic or biosimilar product manufacturers may develop, seek approval for, and launch biosimilar versions or generic versions, respectively, of our products. The FDA has published draft guidance documents on biosimilar product development. For the FDA to approve a biosimilar product as interchangeable with a reference product, the agency must find that the biosimilar product can be expected to produce the same clinical results as the reference product and, for products administered multiple times, the biosimilar and the reference biologic may be switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic. If any of our current or future product candidates are approved by the FDA, the approval of a biosimilar product to one of our products could have a material impact on our business. In particular, a biosimilar product could be significantly less costly to bring to market and priced significantly lower than our products, if approved by the FDA.

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

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payments and other similar provisions during the patent application process and to maintain patents after they are issued. In certain circumstances, we rely on our licensing partners to take the necessary action to comply with these requirements with respect to our licensed intellectual property. While an unintentional lapse can 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. If we fail to obtain and maintain the patents and patent applications covering our products or procedures, we may not be able to stop a competitor from marketing products that are the same as or similar to our current and future product candidates, which would have a material adverse effect on our business.

Changes to the patent law in the United States and other jurisdictions could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

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. Changes in either the patent laws or interpretation of the patent laws in the United States could increase the uncertainties and costs.

The U.S. Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. Depending on future actions by the U.S. Congress, the U.S. courts, the USPTO and the relevant law-making bodies in other countries, 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. Changes in patent law could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may become involved in lawsuits to protect or enforce our intellectual property, which could be expensive, time-consuming and unsuccessful and have a material adverse effect on the success of our business.

Competitors may infringe our licensed patents or any patent we own in the future or misappropriate or otherwise violate our intellectual property rights. We may also be required to defend against claims of infringement and our licensed patents and any patents we own in the future may become involved in priority or other intellectual property related disputes. To counter infringement or unauthorized use, litigation may be necessary to enforce or defend our intellectual property rights or to determine the validity and scope of our own intellectual property rights or the proprietary rights of others. Also, third parties may initiate legal proceedings against us or our licensors to assert that we are infringing their intellectual property rights or to challenge the validity or scope of our owned or licensed intellectual property rights. Litigation and other intellectual property related proceedings could result in substantial costs and diversion of management resources, which could harm our business and financial results. Despite our best efforts, we may not be able to prevent third parties from infringing upon or misappropriating our intellectual property. In addition, an adverse result in any litigation or other intellectual property related proceeding could put one or more of our patents at risk of being invalidated, held unenforceable or interpreted narrowly.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be disclosed during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments in any such proceedings. If securities analysts or investors perceive these results to be negative, it also could have a material adverse effect on the price of shares of our common stock. Any of the foregoing may have a material adverse effect on our business, financial condition, results of operations and prospects.

We may be subject to claims by third parties asserting that our collaborators, licensors, employees or we have misappropriated their intellectual property, have wrongfully used or disclosed confidential information of third parties or are in breach of non-competition or non-solicitation agreements with our competitors.

Many of our employees, our collaborators' employees and our licensors' employees, including our senior management, are currently or previously were employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Some of these employees, including each member of our senior management, executed proprietary rights, non-disclosure and non-competition agreements, or similar agreements, in connection with such previous employment. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property of any such individual's current or former employer. In addition, we could be subject to claims that we or our employees have inadvertently or otherwise used or disclosed alleged trade secrets or other confidential information of former employers or competitors, that we caused an employee to breach the terms of his or her non-competition or non-solicitation agreement, or that we or these individuals have, inadvertently or otherwise, used or disclosed the alleged trade secrets or other proprietary information of a former employer or competitor. Litigation may be necessary to defend against such claims. If we fail in defending any such claims, we may lose valuable intellectual property rights or personnel or sustain monetary damages. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management. Any of the foregoing may have a material adverse effect on our business, financial condition, results of operations and prospects.

Issued patents covering our current and future 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 current or future product candidates, the defendant could counterclaim that the patent covering our product candidate is invalid or unenforceable. The outcome following legal assertions of invalidity and unenforceability is unpredictable. If a third party 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 current and future product candidates. Such a loss of patent protection could have a material adverse impact on our business.

Risks Related to Employee Matters, Managing our Growth and Other Risks Related to our Business

We currently have no marketing and sales organization and have no experience in marketing products. If we are unable to establish marketing and sales capabilities or enter into agreements with third parties to market and sell our product candidates, we may not be able to generate product revenue.

We currently have no sales, marketing, or distribution capabilities and have no experience in marketing products. If any of our product candidates receives appropriate regulatory approval, 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.

If we are unable or decide not to establish internal sales, marketing and distribution capabilities, we will pursue collaborative arrangements regarding the sales and marketing of our products; however, we cannot assure stockholders that we will be able to establish or maintain such collaborative arrangements, on favorable terms if at all. We cannot assure stockholders that we will be able to develop in-house sales and distribution capabilities or establish or maintain relationships with third-party collaborators to commercialize any current or future product candidates.

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

As of June 30, 2019, we had 127 full-time employees, including 99 employees engaged in research and development. As our development and commercialization plans and strategies develop, we expect to need additional managerial, operational, sales, marketing, financial and other personnel. Future growth would impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining and motivating additional employees;
- managing our internal development efforts effectively, including the clinical and FDA review process for our current and future 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 current and future product candidates will depend, in part, on our ability to effectively expand our organization by hiring new employees and expand our groups of consultants and contractors and 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, including substantially all aspects of marketing approval, clinical management, and manufacturing. We cannot assure stockholders that we can effectively manage our outsourced activities.

We are highly dependent on our key personnel, and if we are not successful in attracting, motivating 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 depends upon our ability to attract, motivate and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on our management, particularly our chief executive officer, Richard Murray, and our scientific and medical personnel. The loss of the services of any of our executive officers, key employees, and scientific and medical advisors, and our inability to find suitable replacements, could result in delays in product development and harm our business.

We conduct our operations at our facility in Cambridge, Massachusetts, in a region that is home to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel is intense 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 expect that we will need to recruit talent from outside of our region and doing so may be costly and difficult.

To induce valuable employees to remain at our Company, in addition to salary and cash incentives, we have provided equity awards 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, meaning that such 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.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.

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

Although we maintain workers’ compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

Our internal computer systems, or those used by our CROs, licensees or other collaborators, may fail or suffer security breaches and cyber-attacks, which could compromise our intellectual property or other sensitive information and could result in a material disruption of our business.

Despite the implementation of security measures, our internal computer systems are vulnerable to damage from computer viruses and unauthorized access. While we have not to our knowledge experienced any such material system failure or security breach to date, if such an event were to occur, it could result in a material disruption of our business operations. Likewise, we rely on third parties for many aspects of our business, including manufacturing product candidates and conducting clinical trials. The secure maintenance of this information is critical to our business and reputation. We believe that companies have been increasingly subject to a wide variety of security incidents, cyber-attacks and other attempts to gain unauthorized access. These threats can come from a variety of sources, ranging in sophistication from an individual hacker to a state-sponsored attack. Cyber threats may be generic, or they may be custom-crafted against our information systems. Over the past few years, cyber-attacks have become more prevalent and much harder to detect and defend against.

Our network and storage applications and those of our CROs, licensees, collaborators and vendors may be subject to unauthorized access by hackers or breached due to operator error, malfeasance or other system disruptions. It is often difficult to anticipate or immediately detect such incidents and the damage caused by them. These data breaches and any unauthorized access or disclosure of our information or intellectual property could compromise our intellectual property and expose sensitive business information. A data security breach could also lead to public exposure of personal information of our employees. Cyber-attacks could cause us to incur significant remediation costs, disrupt key business operations and divert attention of management and key information technology resources. Our network security and data recovery measures and those of our CROs, licensees, collaborators and vendors may not be adequate to protect against such security breaches and disruptions. To the extent that any disruption, security breach or cyber-attack were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development and commercialization of our product candidates could be delayed.

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

Natural disasters could severely disrupt our operations and have a material adverse effect on our business. If a natural disaster, power outage or other event occurred that damaged critical infrastructure, such as our headquarters or the manufacturing facilities of our third-party contract manufacturers, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which, could have a material adverse effect on our business.

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

We are exposed to the risk that our employees, independent contractors, vendors, principal investigators, CROs and consultants may engage in fraudulent conduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or disclosure of unauthorized activities to us that violate the regulations of the FDA and comparable foreign regulatory authorities, including those laws requiring the reporting of true, complete and accurate information to such authorities; healthcare fraud and abuse laws and regulations in the United States and abroad; or laws that require the reporting of financial information or data accurately. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. We have adopted a code of conduct applicable to all of our employees, but it is not always possible to identify and deter misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. Additionally, we are subject to the risk that a person 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 result in significant penalties and could have a material adverse effect on our ability to operate our business and our results of operations.

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

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

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

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

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

Our general business strategy may be adversely affected by any economic downturn, volatile business environment or unpredictable and unstable conditions in global credit and financial markets. We cannot assure stockholders that deterioration of the global credit and financial markets would not negatively impact our stock price, our current portfolio of cash equivalents or investments, or our ability to meet our financing objectives. If the current equity and credit markets deteriorate, it may make any necessary debt or equity financing more difficult, more costly, and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans.

Risks Related to our Common Stock

Our ability to utilize our net operating loss carryforwards and certain other tax attributes has been limited by "ownership changes" and may be further limited.

Under Section 382 of the Internal Revenue Code of 1986, as amended, or the IRC, if a corporation undergoes an "ownership change" (generally defined as a greater than 50 percent change (by value) in the ownership of its equity over a three-year period), the corporation's ability to use its pre-change net operating loss, or NOL, carryforwards and certain other pre-change tax attributes to offset its post-change income may be limited. An IRC Section 382 study, completed in August 2016, identified three previous ownership changes for purposes of IRC Section 382. As a result of these ownership changes, our net operating loss and tax credit carryforwards allocable to the periods preceding each such ownership change are subject to limitations under IRC Section 382. We may experience ownership changes in the future as a result subsequent shifts in our stock ownership, some of which are outside our control, which may also be subject to limitations by "ownership changes" in the future, which could result in increased tax liability to us.

The price of our common stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our common stock.

Our stock price is likely to be volatile. The stock market in general and the market for biopharmaceutical companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. The market price for our common stock may be influenced by many factors, including:

- the success of competitive products or technologies;
- results of our clinical trials or those of our competitors;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to our product candidates or clinical development programs;
- continued efforts by BMS to develop and commercialize JTX-8064 following the closing of the transaction with Celgene;
- the results of our efforts to discover, develop, acquire or in-license additional product candidates or drugs;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions; and
- the other factors described in this "Risk Factors" section.

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

We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to stockholders will therefore be limited to the appreciation of their stock.

Our executive officers, directors, principal stockholders and their affiliates will continue to exercise control over our Company, which will limit your ability to influence corporate matters and could delay or prevent a change in corporate control.

As of June 30, 2019, our executive officers and directors, combined with our stockholders who owned more than five percent of our outstanding common stock, and their affiliates, beneficially owned approximately 54 percent of our outstanding common stock. As a result, these stockholders, if they act together, could be able to control the outcome of matters submitted to our stockholders for approval, including the election of directors and any sale, merger,

consolidation, or sale of all or substantially all of our assets. In addition, this concentration of ownership might adversely affect the market price of our common stock by:

- delaying, deferring or preventing a change of control;
- impeding a merger, consolidation, takeover or other business combination; or
- discouraging a potential acquiror from making a tender offer or otherwise attempting to obtain control.

We are incurring and will continue to incur significantly increased costs as a result of operating as a public company, and our management is now required to devote substantial time to new compliance initiatives.

As a public company, we are incurring and will continue to incur significant legal, accounting and other expenses, particularly after we are no longer an emerging growth company. We are subject to the reporting requirements of the Exchange Act, as well as various requirements imposed by the Sarbanes-Oxley Act, rules subsequently adopted by the SEC and Nasdaq to implement provisions of the Sarbanes-Oxley Act, and the Dodd-Frank Wall Street Reform and Consumer Protection Act. Stockholder activism, the current political environment and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate.

We expect the rules and regulations applicable to public companies to substantially increase our legal and financial compliance costs and to make some activities more time-consuming and more costly. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain the same or similar coverage. We also expect that we will need to hire additional accounting, finance and other personnel in connection with our efforts to comply with the requirements of being a public company, and our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers.

We are a "smaller reporting company," and the reduced disclosure requirements applicable to smaller reporting companies may make our common stock less attractive to investors.

We are considered a "smaller reporting company" under Rule 12b-2 of the Exchange Act. We are therefore entitled to rely on certain reduced disclosure requirements, such as an exemption from providing selected financial data and executive compensation information. These exemptions and reduced disclosures in our SEC filings due to our status as a smaller reporting company also mean our auditors are not required to review our internal control over financial reporting and may make it harder for investors to analyze our results of operations and financial prospects. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our common stock prices may be more volatile. We will remain a smaller reporting company until our public float exceeds $250 million or our annual revenues exceed $100 million with a public float greater than $700 million.

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

Certain stockholders hold a substantial number of shares of our common stock. If such stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline.

In addition, shares of common stock that are either subject to outstanding options or reserved for future issuance under our stock incentive plans will become eligible for sale in the public market extent permitted by the provisions of various vesting schedules and Rule 144 and Rule 701 under the Securities Act of 1933, as amended, or the Securities Act, and, in any event, we have filed a registration statement permitting shares of common stock issued on exercise of options to be freely sold in the public market. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

Certain holders of our common stock are entitled to rights with respect to the registration of their shares under the Securities Act. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares held by affiliates. Any sales of securities by these

stockholders who have exercised registration rights could have a material adverse effect on the trading price of our common stock.

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

Our quarterly and annual operating results may fluctuate significantly, which makes it difficult for us to predict our future operating results. From time to time, we may enter into license or collaboration agreements with other companies that include development funding and significant upfront and milestone payments and/or royalties, which may become an important source of our revenue. Accordingly, our revenue may depend on development funding and the achievement of development and clinical milestones under current and any potential future license and collaboration agreements and sales of our products, if approved. These upfront and milestone payments may vary significantly from period to period and any such variance could cause a significant fluctuation in our operating results from one period to the next.

Furthermore, our operating results may fluctuate due to a variety of other factors, many of which are outside of our control and may be difficult to predict, including the following:

- the timing and cost of, and level of investment in, research and development activities relating to our current and other future product candidates, which will change from time to time;
- our ability to enroll patients in clinical trials and the timing of enrollment;
- the cost of manufacturing our current and other future product candidates, which may vary depending on FDA guidelines and requirements, the quantity of production and the terms of our agreements with manufacturers;
- expenditures that we will or may incur to acquire or develop additional product candidates and technologies;
- the timing and outcomes of clinical trials for our current and future product candidates or competing product candidates;
- competition from existing and future products that may compete with our current and future product candidates, and changes in the competitive landscape of our industry, including consolidation among our competitors or partners;
- any delays in regulatory review or approval of any of our current or future product candidates;
- the level of demand for our current and future product candidates, if approved, which may fluctuate significantly and be difficult to predict;
- our ability to commercialize our current and future product candidates, if approved;
- the success of our exclusive license to Celgene and our ability to establish and maintain other collaborations, licensing or other arrangements;
- our ability to adequately support future growth;
- potential unforeseen business disruptions that increase our costs or expenses;
- future accounting pronouncements or changes in our accounting policies; and
- the changing and volatile global economic environment.

The cumulative effect of these factors could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance. If our revenue or operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue and/or earnings guidance we may provide.

Moreover, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us as pharmaceutical companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources.

If securities analysts do not publish research or reports about our business or if they publish negative evaluations of our stock, the price of our stock could decline.

The trading market for our common stock will rely, in part, on the research and reports that industry or financial analysts publish about us or our business. If one or more of the analysts covering our business downgrade their evaluations of our stock, the price of our stock could decline. If one or more of these analysts cease to cover our stock, we could lose visibility in the market for our stock, which, in turn, could cause our stock price to decline.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws may delay or prevent an acquisition of us or a change in our management. These provisions include a classified board of directors, a prohibition on actions by written consent of our stockholders and the ability of our board of directors to issue preferred stock without stockholder approval. In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15 percent of our outstanding voting stock to merge or combine with us. Although we believe these provisions collectively provide for an opportunity to obtain greater value for stockholders by requiring potential acquirors to negotiate with our board of directors, they would apply even if an offer rejected by our board were considered beneficial by some stockholders. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management.

Our bylaws designate the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our bylaws, provide that, unless we consent in writing to an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers and employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our bylaws, or (iv) any action asserting a claim that is governed by the internal affairs doctrine, in each case subject to the Court of Chancery having personal jurisdiction over the indispensable parties named as defendants therein. Any person purchasing or otherwise acquiring any interest in any shares of our capital stock shall be deemed to have notice of and to have consented to this provision of our bylaws. This 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 employees, which may discourage such lawsuits against us and our directors, officers and employees even though an action, if successful, might benefit our stockholders. Stockholders who do bring a claim in the Court of Chancery could face additional litigation costs in pursuing any such claim, particularly if they do not reside in or near the State of Delaware. The Court of Chancery may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments or results may be more favorable to us than to our stockholders. Alternatively, if a court were to find this provision of our amended and restated certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs, which could have a material adverse effect on our business, financial condition or results of operations.

Item 6. Exhibits

Exhibit No.	Description of Exhibit
10.1	Amended and Restated Non-Employee Director Compensation Policy (incorporated by reference to Exhibit 10.1 of the Registrant's Quarterly Report on Form 10-Q (File No. 001-37998) filed May 8, 2019)
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1+	Certifications of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101*	The following materials from the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, formatted in eXtensible Business Reporting Language (XBRL): (i) Condensed Consolidated Balance Sheets, (ii) Condensed Consolidated Statements of Operations and Comprehensive Loss, (iii) Condensed Consolidated Statements of Stockholders' Equity, (iv) Condensed Consolidated Statements of Cash Flows and (v) Notes to Condensed Consolidated Financial Statements

* Filed herewith

\+ Furnished herewith

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

JOUNCE THERAPEUTICS, INC.

Date: August 7, 2019

By: /s/ Kim C. Drapkin

Kim C. Drapkin

Treasurer and Chief Financial Officer

(Principal Financial and Accounting Officer)

Exhibit 31.1

CERTIFICATIONS

I, Richard Murray, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Jounce Therapeutics, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 7, 2019

By: /s/ Richard Murray

Richard Murray, Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Kim C. Drapkin, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Jounce Therapeutics, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 7, 2019

By: /s/ Kim C. Drapkin

Kim C. Drapkin
Treasurer and Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

**CERTIFICATIONS OF CEO AND CFO PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with this Quarterly Report on Form 10-Q of Jounce Therapeutics, Inc. (the "Company") for the period ended June 30, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned officers of the Company hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of her or his knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 7, 2019 By: /s/ Richard Murray
Richard Murray, Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

Date: August 7, 2019 By: /s/ Kim C. Drapkin
Kim C. Drapkin
Treasurer and Chief Financial Officer
(Principal Financial and Accounting Officer)