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 September 30, 2018

OR

☐ **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 001-37687

EDITAS MEDICINE, INC.
(Exact name of registrant as specified in its charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**46-4097528** **(I.R.S. Employer Identification No.)**
11 Hurley Street **Cambridge, Massachusetts** **(Address of principal executive offices)**	**02141** **(Zip Code)**

(617) 401-9000
(Registrant's telephone number, including area code)

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 the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	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 ☒

The number of shares of the Common Stock outstanding as of October 31, 2018 was 47,810,190.

Editas Medicine, Inc.
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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements.

Editas Medicine, Inc.
Condensed Consolidated Balance Sheets
(unaudited)
(amounts in thousands, except share and per share data)

	September 30, 2018	December 31, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	$ 111,701	$ 146,630
Marketable securities	225,791	182,509
Accounts receivable	43	679
Prepaid expenses and other current assets	5,018	2,381
Total current assets	342,553	332,199
Property and equipment, net	39,699	39,442
Restricted cash and other non-current assets	5,378	1,619
Total assets	$ 387,630	$ 373,260
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 5,040	$ 4,020
Accrued expenses	11,341	11,049
Notes payable	—	7,500
Deferred revenue, current	8,725	13,238
Other current liabilities	980	900
Total current liabilities	26,086	36,707
Deferred revenue, net of current portion	104,100	94,725
Construction financing lease obligation, net of current portion	32,694	33,431
Other non-current liabilities	301	317
Total liabilities	163,181	165,180
Commitments and contingencies (see note 7)		
Stockholders' equity		
Preferred stock, $0.0001 par value per share: 5,000,000 shares authorized; no shares issued or outstanding	—	—
Common stock, $0.0001 par value per share: 195,000,000 shares authorized; 47,783,609 and 45,025,448 shares issued, and 47,503,609 and 44,507,960 shares outstanding at September 30, 2018 and December 31, 2017, respectively	5	4
Additional paid-in capital	615,749	514,002
Accumulated other comprehensive loss	(82)	(76)
Accumulated deficit	(391,223)	(305,850)
Total stockholders' equity	224,449	208,080
Total liabilities and stockholders' equity	$ 387,630	$ 373,260

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

Editas Medicine, Inc.
Condensed Consolidated Statements of Operations
(unaudited)
(amounts in thousands, except per share and share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Collaboration and other research and development revenues	$ 14,519	$ 6,282	$ 25,818	$ 10,061
Operating expenses:				
Research and development	17,443	20,396	71,460	56,735
General and administrative	13,334	12,635	41,832	36,817
Total operating expenses	30,777	33,031	113,292	93,552
Operating loss	(16,258)	(26,749)	(87,474)	(83,491)
Other income (expense), net:				
Other (expense) income, net	(4)	196	332	458
Interest income (expense), net	1,024	(46)	2,243	(1,102)
Total other income (expense), net	1,020	150	2,575	(644)
Net loss	$ (15,238)	$ (26,599)	$ (84,899)	$ (84,135)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.32)	$ (0.64)	$ (1.81)	$ (2.13)
Weighted-average common shares outstanding, basic and diluted	47,414,271	41,307,092	46,791,322	39,558,553

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

Editas Medicine, Inc.
Condensed Consolidated Statements of Comprehensive Loss
(unaudited)
(amounts in thousands)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Net loss	$ (15,238)	$ (26,599)	$ (84,899)	$ (84,135)
Other comprehensive (loss) gain:				
Unrealized (loss) gain on marketable debt securities	(83)	44	(6)	(23)
Comprehensive loss	$ (15,321)	$ (26,555)	$ (84,905)	$ (84,158)

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

Editas Medicine, Inc.
Condensed Consolidated Statements of Cash Flows
(unaudited)
(amounts in thousands)

	Nine Months Ended September 30,	
	2018	2017
Cash flow from operating activities		
Net loss	$ (84,899)	$ (84,135)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities:		
Stock-based compensation expense	20,251	15,287
Depreciation	2,374	1,966
Non-cash research and development expense	14,442	5,000
Non-cash investment in equity securities	(3,667)	—
Other non-cash items, net	(2,129)	(17)
Changes in operating assets and liabilities:		
Accounts receivable	636	(607)
Prepaid expenses and other current assets	(2,349)	(258)
Other non-current assets	(92)	2
Accounts payable	1,667	2,563
Accrued expenses	2,344	(8,962)
Deferred revenue	4,388	84,834
Other current and non-current liabilities	—	(21)
Net cash (used in) provided by operating activities	(47,034)	15,652
Cash flow from investing activities		
Purchases of property and equipment	(3,339)	(1,770)
Proceeds from the sale of equipment	18	15
Purchases of marketable securities	(351,162)	(298,233)
Proceeds from maturities of marketable securities	310,000	89,500
Net cash used in investing activities	(44,483)	(210,488)
Cash flow from financing activities		
Proceeds from offering of common stock, net of issuance costs	48,471	96,685
Payments of notes payables	—	(600)
Proceeds from exercise of stock options	8,376	535
Issuances of common stock under benefit plans	362	—
Payments on construction financing lease obligation	(621)	(565)
Net cash provided by financing activities	56,588	96,055
Net decrease in cash and cash equivalents	(34,929)	(98,781)
Cash, cash equivalents and restricted cash, beginning of period	148,249	186,942
Cash, cash equivalents and restricted cash, end of period	$ 113,320	$ 88,161
Supplemental disclosure of cash and non-cash activities:		
Fixed asset additions included in accounts payable and accrued expenses	$ 676	$ 234
Reclassification of liability for common stock subject to repurchase	4	9
Issuance of common stock for settlement of success payments (see note 7)	9,530	—
Issuance of common stock for asset acquisition	1,942	—
Issuance of common stock for settlement of notes payable (see note 7)	12,500	14,823
Offering costs included in accounts payable and accrued expenses	22	—

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

Editas Medicine, Inc.
Notes to Condensed Consolidated Financial Statements
(unaudited)

1. Nature of Business

Editas Medicine, Inc. (the "Company") is a research stage company dedicated to treating patients with genetically defined diseases by correcting their disease-causing genes. The Company was incorporated in the state of Delaware in September 2013. Its principal offices are in Cambridge, Massachusetts.

Since its inception, the Company has devoted substantially all of its efforts to business planning, research and development, recruiting management and technical staff, and raising capital. The Company has primarily financed its operations through various equity and debt financings, including the initial public offering of its common stock (the "IPO"), its follow-on public offerings of its common stock in March 2017 and December 2017, its at-the-market offering of its common stock in January 2018, and private placements of preferred stock, payments received under a research collaboration with Juno Therapeutics, Inc., a Celgene company that is a wholly-owned subsidiary of Celgene Corporation ("Juno Therapeutics"), and from payments received under a strategic alliance and option agreement with Allergan Pharmaceuticals International Limited ("Allergan").

The Company is subject to risks common to companies in the biotechnology industry, including but not limited to, risks of failure of preclinical studies and clinical trials, the need to obtain marketing approval for any drug product candidate that it may identify and develop, the need to successfully commercialize and gain market acceptance of its product candidates, dependence on key personnel, protection of proprietary technology, compliance with government regulations, development by competitors of technological innovations and ability to transition from pilot-scale manufacturing to large-scale production of products.

Liquidity

In February 2016, the Company completed its IPO and received aggregate net proceeds of approximately $97.5 million, after deducting underwriting discounts and commissions and other offering expenses payable by the Company. In March 2017, the Company completed a follow-on offering and received net proceeds of approximately $96.7 million, after deducting underwriting discounts and commissions and other offering expenses payable by the Company (the "2017 March Offering"). In December 2017, the Company completed another follow-on offering and received net proceeds of approximately $57.2 million, after deducting underwriting discounts and other offering expenses payable by the Company (the "2017 December Offering"). During January 2018, the Company completed at-the-market offerings and received net proceeds of approximately $48.5 million (the "2018 January Offerings").

The Company has incurred annual net operating losses in every year since its inception. The Company expects that its existing cash, cash equivalents and marketable securities at September 30, 2018, anticipated interest income, and anticipated research support under the Company's collaboration agreement with Juno Therapeutics will enable it to fund its operating expenses and capital expenditure requirements for at least the next 24 months following the date of this Quarterly Report on Form 10-Q. The Company had an accumulated deficit of $391.2 million at September 30, 2018, and will require substantial additional capital to fund its operations. The Company has never generated any product revenue. There can be no assurance that the Company will be able to obtain additional debt or equity financing or generate product revenue or revenues from collaborative partners, on terms acceptable to the Company, on a timely basis or at all. The failure of the Company to obtain sufficient funds on acceptable terms when needed could have a material adverse effect on the Company's business, results of operations, and financial condition.

2. Summary of Significant Accounting Policies

Unaudited Interim Financial Information

The condensed consolidated financial statements of the Company included herein have been prepared, without audit, pursuant to the rules and regulations of the Securities and Exchange Commission (the "SEC"). Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP") have been condensed or omitted from this report, as is permitted by such rules and regulations. Accordingly, these condensed consolidated financial statements should be read in conjunction with the financial statements and notes thereto included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 (the "Annual Report").

The unaudited condensed consolidated financial statements include the accounts of Editas Medicine, Inc. and its wholly owned subsidiary, Editas Securities Corporation. All intercompany transactions and balances of the subsidiary have been eliminated in consolidation. In the opinion of management, the information furnished reflects all adjustments, all of which are of a normal and recurring nature, necessary for a fair presentation of the results for the reported interim periods. The Company considers events or transactions that occur after the balance sheet date but before the financial statements are issued to provide additional evidence relative to certain estimates or to identify matters that require additional disclosure. The three months ended September 30, 2018 and 2017 are referred to as the third quarter of 2018 and 2017, respectively. The results of operations for interim periods are not necessarily indicative of results to be expected for the full year or any other interim period.

Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the consolidated 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 recognition, accrued expenses, stock-based compensation expense and deferred tax valuation allowances. The Company bases its estimates on historical experience and other market-specific or relevant assumptions that it believes to be reasonable under the circumstances. Actual results may differ from those estimates or assumptions.

Summary of Significant Accounting Policies

The Company's significant accounting policies are described in Note 2, "Summary of Significant Accounting Policies," to the Consolidated Financial Statements included in the Annual Report. There have been no material changes to the significant accounting policies previously disclosed in the Annual Report other than as noted below.

Revenue Recognition

Effective January 1, 2018, the Company adopted the provisions of Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* ("ASC 606"), using the modified retrospective transition method. Under this method, the Company recorded the cumulative effect of initially applying the new standard to all contracts as of the date of adoption.

The Company enters into collaboration agreements and certain other agreements that are within the scope of ASC 606, under which the Company licenses, may license or grants an option to license rights to certain of the Company's product candidates and performs research and development services in connection with such arrangements. The terms of these arrangements typically include payment of one or more of the following: non-refundable, up-front fees; reimbursement of research and development costs; development, clinical, regulatory and commercial sales milestone payments, and royalties on net sales of licensed products.

Under ASC 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services.

To determine the appropriate amount of revenue to be recognized for arrangements determined to be within the scope of ASC 606, the Company performs the following five steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation. The Company only applies the five-step model to contracts when it is probable that the entity will collect consideration it is entitled to in exchange for the goods or services it transfers to the customer.

The promised goods or services in the Company's arrangements typically consist of a license, or option to license, rights to the Company's intellectual property or research and development services. The Company provides options to additional items in such arrangements, which are accounted for as separate contracts when the customer elects to exercise such options, unless the option provides a material right to the customer. Performance obligations are promised goods or services in a contract to transfer a distinct good or service to the customer and are considered distinct when (i) the customer can benefit from the good or service on its own or together with other readily available resources and (ii) the promised good or service is separately identifiable from other promises in the contract. In assessing whether promised good or services are distinct, the Company considers factors such as the stage of development of the underlying intellectual property, the capabilities of the customer to develop the intellectual property on its own or whether the required expertise is readily available and whether the goods or services are integral or dependent to other goods or services in the contract.

The Company estimates the transaction price based on the amount expected to be received for transferring the promised goods or services in the contract. The consideration may include fixed consideration or variable consideration. At the inception of each arrangement that includes variable consideration, the Company evaluates the amount of potential payment and the likelihood that the payments will be received. The Company utilizes either the most likely amount method or expected value method to estimate the amount expected to be received based on which method best predicts the amount expected to be received. The amount of variable consideration that is included in the transaction price may be constrained and is included in the transaction price only to the extent that it is probable that a significant reversal in the amount of the cumulative revenue recognized will not occur in a future period.

The Company's contracts often include development and regulatory milestone payments that are as assessed under the most likely amount method and constrained if it is probable that a significant revenue reversal would occur. Milestone payments that are not within the Company's control or the licensee's control, such as regulatory approvals, are not considered probable of being achieved until those approvals are received. At the end of each reporting period, the Company re-evaluates the probability of achievement of such development and clinical milestones and any related constraint, and if necessary, adjust its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect collaboration and other research and development revenues in the period of adjustment.

For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied). To date, the Company has not recognized any royalty revenue resulting from any of the Company's collaboration or strategic alliance arrangements.

The Company allocates the transaction price based on the estimated standalone selling price. The Company must develop assumptions that require judgment to determine the stand-alone selling price for each performance obligation identified in the contract. The Company utilizes key assumptions to determine the stand-alone selling price, which may include other comparable transactions, pricing considered in negotiating the transaction and the estimated costs. Variable consideration is allocated specifically to one or more performance obligations in a contract when the terms of the variable consideration relate to the satisfaction of the performance obligation and the resulting amounts allocated are consistent with the amounts the Company would expect to receive for the satisfaction of each performance obligation.

The consideration allocated to each performance obligation is recognized as revenue when control is transferred for the related goods or services. For performance obligations which consist of licenses and other promises, the Company utilizes judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition.

The Company receives payments from its customers based on billing schedules established in each contract. Up-front payments and fees are recorded as deferred revenue upon receipt or when due until the Company performs its obligations under these arrangements. Amounts are recorded as accounts receivable when the Company's right to consideration is unconditional.

Equity Securities

The Company records investments in privately issued corporate equity securities that do not have readily determinable fair values, at cost, and adjusts for changes in observable prices minus impairment. Each reporting period the Company adjusts the carrying value of these investments if it observes that additional shares have been issued in an orderly transaction between market participants resulting in a price increase or decrease per share. Additionally, each reporting period the Company reviews these investments for impairment considering all available information to conclude whether an impairment exists. Changes in measurement for all corporate equity investments are recognized in "Other income (expense), net."

Recent Accounting Pronouncements –Adopted

In October 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-18, *Restricted Cash* ("ASU 2016-18"), which requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and restricted cash or restricted cash equivalents. Therefore, amounts described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-18 was effective for fiscal years beginning after December 15, 2017, and interim periods within those years. The guidance is effective on a retrospective basis. The Company adopted this guidance as of October 1, 2017. The Company reclassified restricted cash in the statements of cash flows to be included in the cash and cash equivalents balance. The reclassification was not material to the periods presented. The following table presents cash, cash equivalents and restricted cash as reported on the condensed consolidated balance sheets that equal the total amounts on the condensed consolidated statements of cash flows (in thousands):

	September 30,	
	2018	2017
Cash and cash equivalents	$ 111,701	$ 86,542
Restricted cash included in "Restricted cash and other non-current assets"	1,619	1,619
Total	$ 113,320	$ 88,161

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*, which supersedes the revenue recognition requirements in FASB ASC Topic 605, *Revenue Recognition*, and most industry-specific guidance. The Company adopted the new standard effective January 1, 2018 using the modified retrospective approach. As part of the adoption, the Company reviewed all contracts that were not yet completed as of the date of initial application in determining the cumulative-effect impact related to the adoption of ASC 606. The adoption of ASC 606 resulted in the changes to (i) the allocation of arrangement consideration, including the determination of estimated selling price and the allocation of variable consideration to specific performance obligations for the Company's collaboration agreement with Juno Therapeutics, and (ii) the application of proportional performance as a measure of progress on service related deliverables for the Company's strategic alliance with Allergan.

Effective January 1, 2018, the Company's adoption of ASC 606 resulted in increases of $0.5 million in deferred

revenue and accumulated deficit, which was primarily due to an adjustment for two milestone payments previously earned that will now be recognized over time, partially offset by acceleration of proportional performance revenue.

The following table presents changes in the Company's deferred revenue balance as of January 1, 2018 resulting from adoption of ASC 606 (in thousands):

	Balance at December 31, 2017	Adjustments	Balance at January 1, 2018
Contract liabilities:			
Deferred revenue	$ (107,963)	$ (474)	$ (108,437)

As of September 30, 2018, the Company's accounts receivable and contract liabilities were primarily related to the Company's agreements with Juno Therapeutics and Allergan. The following table presents changes in the Company's accounts receivable and contract liabilities for the nine months ended September 30, 2018 (in thousands):

For the nine months ended September 30, 2018	Balance at December 31, 2017	Additions	Deductions	Balance at September 30, 2018
Accounts receivable	$ 679	$ 1,189	$ (1,825)	$ 43
Contract liabilities:				
Deferred revenue	$ (107,963)	$ (9,986)	$ 5,124	$ (112,825)

During the three and nine months ended September 30, 2018, the Company recognized revenue as a result of the following (in thousands):

	Three Months Ended	Nine Months Ended
	September 30, 2018	
Revenue recognized in the period from:		
Amounts included in deferred revenue at the beginning of the period	$ 687	$ 4,457
Performance obligations satisfied in previous periods	$ (1,255)	$ 1,311

For additional information regarding revenue recognition from contracts with customers, refer to Note 8.

The Company has included the following financial statement line items for comparability purposes as of and for the three and nine months ended September 30, 2018 (in thousands):

	Three Months Ended September 30, 2018		
	As reported under Topic 606	Balances without adoption of ASC 606	Effect of Change
Collaboration and other research and development revenues	$ 14,519	$ 18,974	$ (4,455)
Operating loss	$ (16,258)	$ (11,803)	$ (4,455)
Net loss attributable to common stockholders	$ (15,238)	$ (10,783)	$ (4,455)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.32)	$ (0.23)	$ (0.09)

	Nine Months Ended September 30, 2018		
	As reported under Topic 606	Balances without adoption of ASC 606	Effect of Change
Collaboration and other research and development revenues	$ 25,818	$ 28,933	$ (3,115)
Operating loss	$ (87,474)	$ (84,359)	$ (3,115)
Net loss attributable to common stockholders	$ (84,899)	$ (81,784)	$ (3,115)
Net loss per share attributable to common stockholders, basic and diluted	$ (1.81)	$ (1.75)	$ (0.07)

	As of September 30, 2018		
	As reported under Topic 606	Balances without adoption of ASC 606	Effect of Change
Deferred revenue, current	$ 8,725	$ 13,374	$ (4,649)
Deferred revenue, net of current portion	$ 104,100	$ 86,085	$ 18,015
Accumulated deficit	$ (391,223)	$ (388,108)	$ (3,115)

In 2016, the FASB issued ASU No. 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities* (“ASU 2016-01”). ASU 2016-01 amended guidance related to the recording of financial assets and liabilities. Under the amended guidance, equity investments that are not accounted for under the equity method or those that result in the consolidation of an investee, are to be measured at fair value with changes in fair value recognized in net income (loss). An entity has the option to measure equity investments without readily determinable fair values at cost minus impairment, if any, plus or minus changes resulting from observable price changes in orderly transaction for the identical or similar investments. The amended guidance became effective January 1, 2018. As of September 30, 2018, the Company held an equity investment in Beam Therapeutics Inc. (“Beam”), a privately held company, that it accounted for under the cost method. The equity investment does not have a readily determinable fair value. The Company measured the investment at cost adjusted for impairment or observable price changes. During the three and nine months ended September 30, 2018, the Company did not adjust the value of the Company’s investment in Beam as a result of impairment or based on observable price changes.

Recent Accounting Pronouncements – Issued But Not Yet Adopted

In February 2016, the FASB issued ASU No. 2016-02, *Leases* (“ASU 2016-02”), which applies to all leases and will require lessees to record most leases on the balance sheet, but recognize expense in a manner similar to the current standard. In July 2018, the FASB issued ASU 2018-10, "*Codification Improvements to Topic 842, Leases*," which provides narrow amendments to clarify how to apply certain aspects of ASU 2016-02, and ASU 2018-11, "*Leases (Topic 842): Targeted Improvements*," which provides adopters an additional transition method by allowing entities to initially apply ASU 2016-02, and subsequent related standards, at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018 and interim periods within those years. Entities are required to use a modified retrospective approach of adoption for leases that exist or are entered into after the beginning of the earliest comparative period in the financial statements. Full retrospective application is prohibited. The Company is in the process of updating its systems, policies and internal controls over financial reporting in anticipation of adopting these standards on January 1, 2019. The Company is evaluating the potential impact that the adoption of ASU 2016-02 and the amendments will have on the Company’s consolidated financial statements.

In June 2018, the FASB issued ASU No. 2018-07, *Compensation - Stock Compensation: Improvements to Nonemployee Share-Based Payment Accounting* (“ASU 2018-07”) to simplify the accounting for share-based payments to non-employees by aligning it with the accounting for share-based payments to employees, with certain exceptions. The new guidance expands the scope of ASC 718, *Compensation – Stock Compensation*, to include share-based payments granted to non-employees in exchange for goods or services used or consumed in an entity’s own operations and supersedes the guidance in ASC Topic 505-50, *Equity-Based Payments to Non-Employees*. The guidance is effective

for public business entities in annual periods beginning after December 15, 2018 and interim periods within those years. Early adoption is permitted. The Company is currently evaluating the effect of this guidance on the Company's consolidated financial statements and disclosures.

In August 2018, the FASB issued ASU No. 2018-13, *Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement* ("ASU 2018-13"), which modifies certain disclosure requirements on fair value measurements. The amendments regarding changes in unrealized gains and losses, the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements and the narrative description of measurement uncertainty are required to be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments are required to be applied retrospectively to all periods presented upon their effective date. ASU 2018-13 is effective for fiscal years beginning after December 15, 2019 and interim periods within those years. The Company does not anticipate a material impact to disclosures as a result of the adoption of ASU 2018-13.

3. Cash Equivalents, Marketable Securities and Equity Securities

Cash equivalents, marketable securities and equity securities consisted of the following at September 30, 2018 (in thousands):

September 30, 2018	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash equivalents and marketable securities:				
Money market funds	$ 106,974	$ —	$ —	$ 106,974
U.S. Treasuries	200,437	—	(67)	200,370
Government agency securities	29,922	—	(15)	29,907
Equity securities included in other non-current assets:				
Corporate equity securities	3,667	—	—	3,667
Total	$ 341,000	$ —	$ (82)	$ 340,918

Cash equivalents and marketable securities consisted of the following at December 31, 2017 (in thousands):

December 31, 2017	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash equivalents and marketable securities:				
Money market funds	$ 134,635	$ —	$ —	$ 134,635
U.S. Treasuries	135,601	—	(47)	135,554
Government agency securities	58,979	—	(29)	58,950
Total	$ 329,215	$ —	$ (76)	$ 329,139

At September 30, 2018, the Company held 41 securities that were in an unrealized loss position. The aggregate fair value of securities held by the Company in an unrealized loss position for less than 12 months at September 30, 2018 was $230.3 million, and there were no securities held by the Company in an unrealized loss position for more than 12 months. Pursuant to the adoption of ASU 2016-01, the Company records changes in the fair value of its investments in corporate equity securities to "Other income (expense), net" in the Company's condensed consolidated statements of operations. The Company records unrealized gains (losses) on available-for-sale debt securities as a component of accumulated other comprehensive income (loss) until such gains and losses are realized.

As of September 30, 2018, the Company did not intend to sell, and would not be more likely than not required to sell, the debt securities in an unrealized loss position before recovery of their amortized cost bases. Furthermore, the Company has determined that there were no material changes in the credit risk of the debt securities. As a result, the Company determined it did not hold any marketable securities with any other-than-temporary impairment as of

September 30, 2018.

There were no realized gains or losses on available-for-sale securities during the nine months ended September 30, 2018 or 2017.

4. Fair Value Measurements

Assets measured at fair value on a recurring basis as of September 30, 2018 were as follows (in thousands):

Financial Assets	September 30, 2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents:				
Money market funds	$ 106,974	$ 106,974	$ —	$ —
U.S. Treasuries	4,485	4,485	—	—
Marketable securities:				
U.S. Treasuries	195,885	195,885	—	—
Government agency securities	29,907	29,907	—	—
Restricted cash and other non-current assets:				
Corporate equity securities	3,667	—	3,667	—
Money market funds	1,619	1,619	—	—
Total financial assets	$ 342,537	$ 338,870	$ 3,667	$ —

Assets measured at fair value on a recurring basis as of December 31, 2017 were as follows (in thousands):

Financial Assets	December 31, 2017	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash and cash equivalents				
Money market funds	$ 134,635	$ 134,635	$ —	$ —
U.S. Treasuries	11,995	11,995	—	—
Marketable securities:				
U.S. Treasuries	123,559	123,559	—	—
Government agency securities	58,950	58,950	—	—
Money market funds, included in restricted cash	1,619	1,619	—	—
Total financial assets	$ 330,758	$ 330,758	$ —	$ —

There were no transfers between fair value measurement levels during the nine months ended September 30, 2018.

5. Accrued Expenses

Accrued expenses consisted of the following (in thousands):

	As of	
	September 30, 2018	December 31, 2017
Employee related expenses	$ 4,616	$ 3,708
Sublicensing and success payment expenses	2,250	2,000
Intellectual property and patent related fees	2,082	2,370
Professional service expenses	1,255	487
Process and platform development expenses	1,047	2,301
Other expenses	91	183
Total	$ 11,341	$ 11,049

6. Property and Equipment, net

Property and equipment, net consisted of the following (in thousands):

	As of	
	September 30, 2018	December 31, 2017
Building	$ 35,167	$ 35,167
Laboratory equipment	9,568	7,415
Computer equipment	733	550
Leasehold improvements	200	177
Furniture and office equipment	166	95
Software	118	96
Total property and equipment	45,952	43,500
Less: accumulated depreciation	(6,253)	(4,058)
Property and equipment, net	$ 39,699	$ 39,442

7. Commitments and Contingencies

Hurley Street Lease

In February 2016, the Company entered into a lease agreement for 59,783 square feet of office and laboratory space located on Hurley Street in Cambridge, Massachusetts. The term of the lease began on October 1, 2016. In connection with the lease and as a security deposit, the Company deposited with the landlord a letter of credit in the amount of approximately $1.6 million. Subject to the terms of the lease and certain reduction requirements specified therein, the $1.6 million security deposit may decrease over time. The letter of credit, which is collateralized by the Company with cash held in a money market account, is recorded in restricted cash and other non-current assets in the accompanying condensed consolidated financial statements as of September 30, 2018 and December 31, 2017.

In connection with this lease, the landlord provided a tenant improvement allowance for costs associated with the design, engineering, and construction of tenant improvements for the leased facility. For accounting purposes, the Company was deemed the owner of the building during the construction period due to the fact that the Company was involved in the construction project, including having responsibilities for cost overruns for planned tenant improvements that did not qualify as “normal tenant improvements” under the lease accounting guidance. Throughout the construction period, the Company recorded the project construction costs incurred as an asset, along with a corresponding facility lease obligation, on its balance sheet for the total amount of the project costs incurred whether funded by the Company or the landlord.

Construction was completed in October 2016, and the Company considered the requirements for sale-leaseback accounting treatment, which included an evaluation of whether all risks of ownership had transferred back to the landlord, as evidenced by a lack of continuing involvement in the leased property. The Company determined that the arrangement did not qualify for sale-leaseback accounting treatment, the building asset would remain on the Company’s

balance sheet at its historical cost, and such asset would be depreciated over its estimated useful life of 30 years.

The Company bifurcates its future lease payments pursuant to the Hurley Street lease into (i) a portion that is allocated to the building and (ii) a portion that is allocated to the land on which the building is located, which is recorded as rental expense. Although the Company did not begin making lease payments pursuant to the Hurley Street lease until November 2016, the portion of the lease obligation allocated to the land is treated for accounting purposes as an operating lease that commenced upon execution of the Hurley Street lease in February 2016.

The lease will continue until October 2023. The Company has the option to extend the lease for an additional five year term at market-based rates. The Company began using this space as its headquarters in October 2016 and rental payments for this property began in November 2016. The base rent is subject to increases over the term of the lease.

In February 2017, the Company subleased approximately 10,000 square feet of the Hurley Street premises pursuant to a sublease (the "Sublease"). The Sublease commenced in February 2017 and was terminated in June 2018.

Licensor Expense Reimbursement

The Company is obligated to reimburse The Broad Institute, Inc. ("Broad") and the President and Fellows of Harvard College ("Harvard") for expenses incurred by each of them associated with the prosecution and maintenance of the patent rights that the Company licenses from them pursuant to the license agreement by and among the Company, Broad and Harvard, including the interference and opposition proceedings involving patents licensed to the Company under the license agreement, and other license agreements between the Company and Broad. As such, the Company anticipates that it has a substantial commitment in connection with these proceedings until such time as these proceedings have been resolved, but the amount of such commitment is not determinable. During the three and nine months ended September 30, 2018, the Company recognized $2.9 million and $11.0 million in expense for such reimbursement, respectively. During the three and nine months ended September 30, 2017, the Company recognized $5.1 million and $13.0 million in expense for such reimbursement, respectively.

Success Payments

In 2016, the Company entered into patent license agreements with each of The General Hospital Corporation, d/b/a Massachusetts General Hospital ("MGH"), and Broad (collectively, the "2016 License Agreements"). Pursuant to the terms of the 2016 License Agreements, the Company is required to make certain success payments to MGH, Broad and Wageningen University ("Wageningen" and such payments, collectively, the "Success Payments"), payable in cash or, at the Company's election, common stock in the case of MGH or, in the case of Broad and Wageningen, promissory notes payable in cash or, at the Company's election subject to certain conditions, common stock of the Company. The Success Payments are payable, if and when, the Company's market capitalization reaches specified thresholds for a specific period of time or upon a sale of the Company for consideration in excess of those thresholds, as discussed more fully in Note 8 (collectively, the "Payment Conditions").

The Success Payments were accounted for under the provisions of FASB ASC, Topic 505-50, *Equity-Based Payments to Non-Employees*. The Company has the right to terminate any of the 2016 License Agreements at will upon written notice. Absent any of the Payment Conditions being achieved prior to termination, the Company would not be obligated to pay any Success Payments. As such, the Company will recognize the expense and liability associated with each Success Payment upon achievement of the associated Payment Conditions, if ever. The Company records this expense as a research and development expense in its statements of operations.

The Company triggered the first Success Payment under one of the 2016 License Agreements during the first quarter of 2017 when the Company's market capitalization reached $750 million. In March 2017, the Company issued promissory notes for an aggregate principal amount of $5.0 million to Broad and Wageningen and the Company settled such notes in August 2017. The Company triggered another Success Payment under one of the 2016 License Agreements during the fourth quarter of 2017 when the Company's market capitalization reached $1.0 billion. In December 2017, the Company issued promissory notes for an aggregate principal amount of $7.5 million to Broad and settled such notes in January 2018.

The Company triggered a Success Payment under the MGH license agreement during the fourth quarter of 2017 when the Company's market capitalization reached $1.0 billion. The Company accrued $2.0 million relating to the such Success Payment owed to MGH which is included in accrued expense on the condensed consolidated balance sheet for the year ended December 31, 2017. In January 2018, the Company settled this liability through the issuance of shares of its common stock to MGH.

The Success Payments issued to Broad and Wageningen are discussed more fully within the Notes Payable section below.

Research Funding Payments

In June 2018, the Company entered into a sponsored research agreement (the "Sponsored Research Agreement") with Broad, which is described more fully in Note 8. Pursuant to the terms of the Sponsored Research Agreement, the Company is required to make certain research funding payments to Broad, payable by promissory note, cash or common stock. Under the Sponsored Research Agreement, the Company is obligated to make payments of research funding to Broad in the event the Company's market capitalization reaches specified thresholds ranging from a mid-nine digit dollar amount to a low-eleven digit dollar amount ("Market Cap Research Funding") or a Company sale for consideration ranging from a mid-nine digit dollar amount to a low-eleven digit dollar amount ("Company Sale Research Funding" and, collectively with the Market Cap Research Funding, the "Research Funding Payments"). In connection with entering into the Sponsored Research Agreement, the Company confirmed that the first two Research Funding Payments of $5.0 million and $7.5 million were due and payable to Broad (the "Initial Research Payments"). In June 2018, the Company issued promissory notes for an aggregate principal balance of $12.5 million to Broad, which were settled by the issuance of shares of common stock, and are described more fully in the Notes Payable section.

The Research Funding Payments were accounted for under the provisions of FASB ASC, Topic 505-50, *Equity-Based Payments to Non-Employees*. Other than the Initial Research Payments, the Company is not required to make additional Research Funding Payments if the Company, whether directly or through its affiliates or sublicensees, is not researching, developing, or commercializing products based on or incorporating inventions developed under the Sponsored Research Agreement and exclusively licensed to the Company from Broad or based on or incorporating CRISPR technology owned, co-owned, or controlled by Broad and otherwise licensed to the Company, subject to certain exclusions. As such, the Company will recognize the expenses and liability associated with each Research Funding Payment upon achievement of the associated Research Funding Payment conditions, if ever. The Company records this expense as a research and development expense in its statements of operations.

Notes Payable

In December 2016, in connection with the Company's entry into the Cpf1 license agreement with Broad (the "Cpf1 License Agreement"), one of the 2016 License Agreements, the Company issued promissory notes in an aggregate principal amount of $10.0 million to Broad and Wageningen (the "Initial Notes"). Outstanding principal and accrued interest on the Initial Notes were due and payable on the earlier of December 2017 or a specified period of time following a Company sale or change of control event. The Initial Notes accrued interest at a rate of 4.8% per annum. The Company fully settled the outstanding principal and accrued interest on the Initial Notes by paying $0.2 million in cash to Wageningen in August 2017 and issuing 108,104 shares and 371,166 shares of common stock to Broad in August 2017 and September 2017, respectively.

In March 2017, a $5.0 million Success Payment under the Cpf1 License Agreement became due upon the market capitalization of the Company's common stock reaching $750 million. The Company issued a promissory note to each of Broad and Wageningen in an aggregate original principal amount of $5.0 million (collectively, the "March Success Payment Notes"). Outstanding principal and accrued interest on the March Success Payment Notes were due and payable in August 2017. The March Success Payment Notes were subject to the same interest and terms as the Initial Notes, other than the maturity date. The Company settled the outstanding principal and accrued interest on the March Success Payment Notes in August 2017 by paying $0.4 million in cash to Wageningen and issuing 271,347 shares of common stock to Broad in August 2017. In September 2017, Wageningen designated Broad as the recipient of any

future promissory notes that are owed to Wageningen pursuant to the Cpf1 License Agreement.

In December 2017, $7.5 million in Success Payments under the Cpf1 License Agreement and the Cas9-II license agreement with Broad (the "Cas9-II License Agreement"), one of the 2016 License Agreements, became due upon the Company's market capitalization reaching $1.0 billion. The Company issued promissory notes to Broad in an aggregate original principal amount of $7.5 million (collectively, the "December Success Payment Notes"). Outstanding principal and accrued interest on the December Success Payment Notes were due and payable in May 2018. The December Success Payment Notes were subject to the same interest and terms as the Initial Notes, other than the maturity date. The Company fully settled the outstanding principal and accrued interest on the December Success Payment Notes by issuing 225,909 shares of common stock to Broad in January 2018.

In June 2018, in connection with the Company's entry into the Sponsored Research Agreement with Broad and the trigger of the Initial Research Payments, the Company issued promissory notes in an aggregate principal amount of $12.5 million to Broad (the "Initial Research Notes") bearing interest at a rate of 4.8% annum, except with respect to $7.5 million of the principal, which would not start accruing interest until November 2018. The Company fully settled the outstanding principal and accrued interest on the Initial Research Notes by issuing 330,617 shares of common stock to Broad in June 2018.

Litigation

The Company is not a party to any litigation and did not have contingency reserves established for any litigation liabilities as of September 30, 2018 or December 31, 2017.

8. Significant Agreements

Juno Therapeutics Collaboration Agreement

Summary of Agreement

In May 2015, the Company entered into a collaboration and license agreement (the "Collaboration Agreement") with Juno Therapeutics and in May 2018 the Company and Juno Therapeutics entered into an amended and restated collaboration and license agreement (the Collaboration Agreement, as amended and restated, the "Amended Collaboration Agreement"). The collaboration is focused on the research and development of engineered T cells with chimeric antigen receptors ("CARs") and T cell receptors ("TCRs") that have been genetically modified to recognize and kill other cells. Pursuant to the Collaboration Agreement, the parties were pursuing the research and development of CAR and TCR engineered T cell products utilizing the Company's genome editing technologies with Juno Therapeutics' CAR and TCR technologies across three research areas, which was increased to four research areas under the Amended Collaboration Agreement.

The collaborative program of research to be undertaken by the parties pursuant to the Amended Collaboration Agreement will be conducted in accordance with a mutually agreed upon research plan which outlines each party's research and development responsibilities across the four research areas. The Company's research and development responsibilities under the research plan are related to generating genome editing reagents that modify gene targets selected by Juno Therapeutics. Juno Therapeutics is responsible for evaluating and selecting for further research and development CAR and TCR engineered T cell products modified with the Company's genome editing reagents. Except with respect to the Company's obligations under the mutually agreed upon research plan, Juno Therapeutics has sole responsibility, at its own cost, for the worldwide research, development, manufacturing and commercialization of products within each of the four research areas for the diagnosis, treatment or prevention of any cancer in humans through the use of engineered T cells, excluding the diagnosis, treatment or prevention of medullary cystic kidney disease 1 (the "Exclusive Field").

The initial term of the research program commenced on May 26, 2015 and continues for five years ending on May 26, 2020 (the "Initial Research Program Term"). Juno Therapeutics may extend the Initial Research Program Term for up to two additional one year periods upon the payment of extension fees for each one year extension period,

assuming the Company has agreed to the extension request(s) (together, the initial term and any extension period(s) are referred to as the "Research Program Term"). The Research Program Term and the optional extensions were not changed by the Amended Collaboration Agreement.

Under the terms of the Collaboration Agreement, the Company granted to Juno Therapeutics during the Research Program Term a nonexclusive, worldwide, royalty-free, non-sublicensable license under certain of the intellectual property controlled by the Company solely for the purpose of conducting the following activities required under the specified research under the Collaboration Agreement: (i) conduct activities assigned to Juno Therapeutics under the research plan, (ii) conduct activities assigned to the Company under the research plan that the Company fails or refuses to conduct in a timely manner, (iii) research, evaluate and conduct preclinical testing and development of certain engineered T cells relating to the three research areas that were originally the subject of the arrangement and (iv) evaluate the data developed in the conduct of activities under the research plan. Pursuant to the terms of the Amended Collaboration Agreement, the license rights granted to Juno Therapeutics were expanded to include, during the Research Program Term, a nonexclusive, worldwide, royalty-free, non-sublicensable license under certain of the intellectual property controlled by the Company to: (i) research, evaluate and conduct preclinical testing and development of certain engineered T cells relating to the fourth research area and (ii) research, develop and use certain research tools (together, the initial research license granted per the terms of the Collaboration Agreement and the incremental research license granted per the terms of the Amended Collaboration Agreement are referred to as the "Research License").

As it relates to two of the three research areas that were originally the subject of the arrangement, under the terms of the Collaboration Agreement, the Company granted to Juno Therapeutics an exclusive, milestone and royalty-bearing, sublicensable license under certain of the intellectual property controlled by the Company to research, develop, make and have made, use, offer for sale, sell, import and export selected CAR and TCR engineered T cell products in the Exclusive Field on a worldwide basis, specifically as it relates to certain targets selected by Juno Therapeutics pursuant to the research program. Furthermore, as it relates to the same two research areas, under the terms of the Collaboration Agreement, the Company granted to Juno Therapeutics a non-exclusive, milestone and royalty-bearing, sublicensable license under certain of the intellectual property controlled by the Company to use genome editing reagents generated under the research program that are used in the creation of certain CAR or TCR engineered T cell products on which Juno Therapeutics has filed an investigational new drug ("IND") application in the Exclusive Field for the treatment or prevention of a cancer in humans to research, develop, make and have made, use, offer for sale, sell, import and export those CAR or TCR engineered T cell products in all fields outside of the Exclusive Field (the "Non-Exclusive Field") on a worldwide basis, specifically as it relates to certain targets selected by Juno Therapeutics pursuant to the research program (together, the license in the Exclusive Field and the license in the Non-Exclusive Field are referred to as the "Development and Commercialization License" for each particular research area). Additionally, as it relates to the third research area that was originally the subject of the arrangement, under the terms of the Collaboration Agreement, the Company granted to Juno Therapeutics a milestone and royalty-bearing, sublicensable license under certain of the intellectual property controlled by the Company to research, develop, make and have made, use, offer for sale, sell, import or export selected CAR and TCR engineered T cell products that utilize the genome editing reagents generated under the research program associated with those CAR and TCR engineered T cell products in the Exclusive Field on a worldwide basis, specifically as it relates to certain products selected by Juno Therapeutics pursuant to the research program. The license associated with the third research area is exclusive as it relates to CAR or TCR engineered T cell products directed to certain targets as selected by Juno Therapeutics, but is otherwise non-exclusive (referred to as the "Development and Commercialization License" for the third research area). Pursuant to the terms of the Amended Collaboration Agreement, as it relates to the fourth area of research that was added to the collaboration, the Company granted to Juno Therapeutics a milestone and royalty-bearing, sublicensable license under certain of the intellectual property controlled by the Company to research, develop, make and have made, use, offer for sale, sell, import or export selected CAR and TCR engineered T cell products that utilize the genome editing reagents generated under the research program associated with those CAR and TCR engineered T cell products in the Exclusive Field on a worldwide basis, specifically as it relates to certain products selected by Juno Therapeutics pursuant to the research program. The license associated with the fourth research area is exclusive as it relates to CAR or TCR engineered T cell products directed to certain targets as selected by Juno Therapeutics, but is otherwise non-exclusive (referred to as the "Development and Commercialization License" for the fourth research area).

The Amended Collaboration Agreement is being managed on an overall basis by a project leader from each of the Company and Juno Therapeutics. The project leaders serve as the contact point between the parties with respect to the research program and are primarily responsible for facilitating the flow of information, interaction, and collaboration between the parties. In addition, the research and development activities under the Amended Collaboration Agreement during the Research Program Term are governed by a joint research committee ("JRC") formed by an equal number of representatives from the Company and Juno Therapeutics. The JRC oversees, reviews and recommends direction of the research program. Among other responsibilities, the JRC monitors and reports research progress and ensures open and frequent exchange between the parties regarding research program activities. The Amended Collaboration Agreement did not alter the governance provisions in the Collaboration Agreement.

Under the terms of the Collaboration Agreement, the Company received a $25.0 million up-front, non-refundable, non-creditable cash payment. In connection with the entry into the Amended Collaboration Agreement, the Company received an additional $5.0 million up-front, non-refundable, non-creditable cash payment. Moreover, the Company became entitled to receive two $2.5 million milestones related to technical progress in one of the research areas upon the execution of the Amended Collaboration Agreement. In addition, Juno Therapeutics is obligated to pay to the Company an aggregate of up to $22.0 million in research and development funding over the Initial Research Program Term across the four research areas consisting primarily of funding for up to a specified maximum number of full time equivalents personnel each year over the Initial Research Program Term across four research areas. Consistent with the terms of the Collaboration Agreement, under the terms of the Amended Collaboration Agreement, there is no incremental compensation due to the Company with respect to the Development and Commercialization License granted to Juno Therapeutics associated with the first target or product, as applicable, designated by Juno Therapeutics within each of the four research areas. However, for two of the three research areas that were originally the subject of the arrangement, Juno Therapeutics continues to have the option to purchase up to three additional Development and Commercialization Licenses associated with other gene targets for an additional fee of approximately $2.5 million per target. In addition, Juno Therapeutics is required to make certain milestone payments to the Company upon the achievement of specified development, regulatory and commercial events. More specifically, for the first product to achieve the associated event in each of the three research areas that were originally the subject of the arrangement, the Company is eligible to receive up to $77.5 million in development milestone payments and up to $80.0 million in regulatory milestone payments, while the Company is eligible to receive up to $80.0 million in development milestone payments and up to $80.0 million in regulatory milestone payments for the first product to achieve the associated event in the fourth area of research that was added to the collaboration. In addition, the Company is eligible to receive additional development and regulatory milestone payments for subsequent products developed within each of the four research areas. Moreover, the Company is eligible for up to $75.0 million in commercial milestone payments associated with aggregate sales of all products within each of the four research areas. Development milestone payments are generally triggered upon the achievement of certain specified development criteria or upon initiation of a defined phase of clinical research for a product candidate. Regulatory milestone payments are triggered upon approval to market a product candidate by the United States Food and Drug Administration ("FDA") or other global regulatory authorities. Commercial milestone payments are triggered when an approved pharmaceutical product reaches certain defined levels of net sales by the licensee. The milestone payments and related triggering events associated with the three research areas that were originally the subject of the Collaboration Agreement were not modified in the Amended Collaboration Agreement.

In addition, to the extent any of the product candidates covered by the licenses conveyed to Juno Therapeutics under the Amended Collaboration Agreement are commercialized, the Company would be entitled to receive tiered royalty payments of low double digits based on a percentage of net sales. Similar to the milestones, pursuant to the Amended Collaboration Agreement, the Company is eligible to receive an independent royalty stream associated with the fourth area of research that was added to the collaboration. Royalty payments are subject to certain reductions, including for any royalty payments required to be made by Juno Therapeutics related to a third-party's intellectual property rights, subject to an aggregate minimum floor. Royalties are due on a licensed product-by-licensed product and country-by-country basis from the date of the first commercial sale of each product in a country until the later of: (i) the tenth anniversary of the first commercial sale of such licensed product in such country and (ii) the expiration date in such country of the last to expire valid claim within the licensed intellectual property covering the manufacture, use or sale of such licensed product in such country. The Company achieved $2.5 million development milestones under the Collaboration Agreement resulting from technical progress in a research program in each of May 2016 and July 2017

(the “July 2017 Juno Milestone Payment”). The Company achieved two additional $2.5 million development milestones under the Amended Collaboration Agreement resulting from technical progress in a research program in May 2018. Due to the uncertainty of pharmaceutical development and the high historical failure rates generally associated with drug development, no additional milestone or royalty payments may ever be received from Juno Therapeutics. As of September 30, 2018, the next potential milestone payment that the Company may be entitled to receive under the Amended Collaboration Agreement is a milestone payment of $2.5 million for the achievement of certain development criteria. There are no cancellation, termination or refund provisions in the Amended Collaboration Agreement that contain material financial consequences to the Company.

Unless earlier terminated, the Amended Collaboration Agreement will continue in full force and effect, on a licensed product-by-licensed product and country-by-country basis until the date no further payments are due to the Company from Juno Therapeutics. Either party may terminate the Amended Collaboration Agreement if the other party has materially breached or defaulted in the performance of any of its material obligations and such breach or default continues after the specified cure period. Either party may terminate the Amended Collaboration Agreement in the event of the commencement of any proceeding in or for bankruptcy, insolvency, dissolution or winding up by or against the other party that is not dismissed or otherwise disposed of within a specified time period. Juno Therapeutics may terminate the Amended Collaboration Agreement for convenience upon not less than six months prior written notice to the Company. The Company may terminate the Amended Collaboration Agreement in the event that Juno Therapeutics brings, assumes, or participates in, or knowingly, willfully or recklessly assists in bringing a dispute or challenge against the Company related to its intellectual property.

Termination of the Amended Collaboration Agreement for any reason does not release either party from any liability which, at the time of such termination, has already accrued to the other party or which is attributable to a period prior to such termination nor preclude either party from pursuing any rights and remedies it may have under the agreement or at law or in equity with respect to any breach of the Amended Collaboration Agreement. If Juno Therapeutics terminates the Amended Collaboration Agreement as a result of the Company’s uncured material breach or default, then: (i) the licenses and rights conveyed to Juno Therapeutics will continue as set forth in the agreement, (ii) Juno Therapeutics’ obligations related to milestones and royalties will continue as set forth in the agreement and (iii) Juno Therapeutics’ rights to prosecute, maintain and enforce certain intellectual property rights will continue as set forth in the agreement. If Juno Therapeutics terminates the Amended Collaboration Agreement for convenience or if the Company terminates the Amended Collaboration Agreement as a result of Juno Therapeutics’ uncured material breach or default, then the licenses conveyed to Juno Therapeutics will terminate. The Amended Collaboration Agreement did not modify the termination provisions in the Collaboration Agreement.

Accounting Analysis

The Company evaluated the Amended Collaboration Agreement in accordance with the provisions of ASC 606. The Company has accounted for the amendment resulting from the Amended Collaboration Agreement as a modification to the original contract and not as a separate contract. The Company combined the Amended Collaboration Agreement with the Collaboration Agreement because the scope of the arrangement did not solely increase due to the addition of distinct promised goods or services with pricing that reflects the associated standalone selling prices. For the remaining goods and services that are distinct from the goods and services that were transferred on or before the date of the effectiveness of the Amended Collaboration Agreement, the Company has accounted for the modification on a prospective basis as if it were a termination of the existing contract and the creation of a new contract. Conversely, the remaining goods and services that are not distinct from the goods and services that were transferred on or before the date of the effectiveness of the Amended Collaboration Agreement were deemed to form part of a single performance obligation that is partially satisfied so they have been accounted for as part of the existing contract for which an adjustment was recorded on a cumulative catch-up basis at the date of the modification.

The Company has identified the following performance obligations under the combined arrangement: (i) Research License and the related research and development services during the Initial Research Program Term (the “Research License and Related Services”), (ii) four material rights related to the first Development and Commercialization Licenses related to each of the four research areas (each, a “First Development and Commercialization License Material Right”) and (iii) six material rights related to the option to purchase up to three

additional Development and Commercialization Licenses for two of the research areas (each, an "Additional Development and Commercialization License Material Right"). Upon exercise of the option to obtain a Development and Commercialization License under any of the four research areas, the Company will provide Juno Therapeutics with a license covering the further development and potential commercialization of the underlying target or product, as applicable. The Company has determined that the ability to obtain Development and Commercialization Licenses under the arrangement represents a material right because Juno Therapeutics is entitled to incremental licenses for additional consideration that represents a significant discount from amounts that would otherwise be offered for the related goods to comparable customers outside of the contract.

The Company has concluded that the Research License is not distinct from the research and development services during the Initial Research Program Term as Juno Therapeutics cannot obtain the benefit of the Research License without the Company performing the research and development services. The services incorporate proprietary technology, unique skills and specialized expertise, particularly as it relates to genome editing technology that is not available in the marketplace. As a result, the Research License, inclusive of the incremental license granted in connection with the Amended Collaboration Agreement, has been combined with the research and development services into a bundled performance obligation. The Company has concluded that the First Development and Commercialization License Material Rights for each respective research area and the Additional Development and Commercialization License Material Rights for the two research areas to which they relate are each a separate performance obligation. These material rights, of which there are ten in total, are distinct from the other performance obligations in the arrangement as they are options in the contract that are not required for Juno Therapeutics to obtain the benefit of the other promised goods and services in the arrangement. Accordingly, in accounting for the modification resulting from the Amended Collaboration Agreement, the Research License and Related Services performance obligation was treated as part of the existing contract, whereas the material right performance obligations were treated as a termination of the existing contract and the creation of a new contract.

As of September 30, 2018, the total transaction price associated with the remaining consideration based on the Amended Collaboration Agreement was determined to be $45.8 million, consisting of: (i) $25.0 million upfront non-refundable, non-creditable cash payment associated with the Collaboration Agreement, (ii) $5.0 million upfront non-refundable, non-creditable cash payment associated with the Amended Collaboration Agreement, (iii) $8.1 million of remaining research and development funding, (iv) $2.7 million of milestone payments received by the Company under the Collaboration Agreement that were not yet recognized as revenue and (v) $5.0 million of milestone payments due to the Company upon execution of the Amended Collaboration Agreement. The research and development funding is being paid by Juno Therapeutic to the Company based on the number of the Company's full time equivalents of its personnel conducting the research under the Amended Collaboration Agreement. The Company utilizes the most likely amount method to determine the amount of research and development funding to be received. The Company also utilizes the most likely amount method to estimate any development and regulatory milestone payments to be received. As of September 30, 2018, there were no milestones that had not been earned and received included in the transaction price. The Company considers the stage of development and the risks associated with the remaining development required to achieve the milestone, as well as whether the achievement of the milestone is outside the control of the Company or Juno Therapeutics. The outstanding milestone payments were fully constrained as of September 30, 2018, as a result of the uncertainty whether any of the milestones will be achieved. The Company has determined that any commercial milestones and sales-based royalties will be recognized when the related sales occur as they were determined to relate predominantly to the license(s) to be granted and therefore have also been excluded from the transaction price. The Company reevaluates the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur. Through the date of the Amended Collaboration Agreement, the Company had recognized approximately $12.3 million of revenue associated with the Research License and Related Services which was excluded from the modification date transaction price.

The transaction price was allocated to the performance obligations based on the relative estimated standalone selling prices of each performance obligation or, in the case of certain variable consideration, to one or more performance obligations. The estimated standalone selling price for the Research License and Related Services is primarily based on the nature of the services to be performed and estimates of the associated effort and costs of the services, adjusted for a reasonable profit margin that would be expected to be realized under similar contracts. The Company developed the estimated standalone selling price for the material rights based on the difference between the

value of the license granted and any additional consideration to be received upon exercise of the underlying option, adjusted for the probability of exercise. The value of the license granted was determined based on the probability-weighted present value of expected future cash flows associated with each license related to each specific research area. In developing such estimate, the Company also considered applicable market conditions and relevant entity-specific factors, including those factors contemplated in negotiating the agreement, probability of success and the time needed to commercialize a product candidate pursuant to the associated license.

The transaction price allocated to each performance obligation as of September 30, 2018 was as follows: (i) Research License and Related Services: $15.8 million, (ii) First Development and Commercialization License Material Right related to the first research area: $3.6 million, (iii) First Development and Commercialization License Material Right related to the second research area: $6.0 million, (iv) First Development and Commercialization License Material Right related to the third research area: $0.1 million, (v) First Development and Commercialization License Material Right related to the fourth research area: $18.3 million, (vi) the first Additional Development and Commercialization License Material Right for the first research area: $0.3 million, (vii) the second Additional Development and Commercialization License Material Right for the first research area: $0.2 million, (viii) the third Additional Development and Commercialization License Material Right for the first research area: $0.1 million, (ix) the first Additional Development and Commercialization License Material Right for the second research area: $0.8 million, (x) the second Additional Development and Commercialization License Material Right for the second research area: $0.5 million, and (xi) the third Additional Development and Commercialization License Material Right for the second research area: $0.3 million.

The Company recognizes revenue related to amounts allocated to the Research License and Related Services as the underlying services are performed using a proportional performance model. The Company measures proportional performance based on full time employee hours relative to projected full time employee hours to complete the research services which best reflects the progress towards satisfaction of the performance obligation. Revenue related to each of the material rights will be recognized upon the earlier of when the respective options are exercised and the Company transfers control of the related license or when the respective options lapse. The rights to be conveyed to Juno Therapeutics pursuant to each of the Development and Commercialization Licenses extend exclusively to an individual target or product, as applicable; therefore, control is deemed to be transferred upon the designation by Juno Therapeutics of the specific target or product, as applicable, whereupon the license becomes effective upon Juno Therapeutics exercising their option. None of the options associated with the material rights had been exercised or had lapsed as of September 30, 2018.

During the three months ended September 30, 2018 and 2017, the Company recognized revenue under the Collaboration Agreement and the Amended Collaboration Agreement totaling approximately $0.7 million and $3.1 million, respectively. During the nine months ended September 30, 2018 and 2017, the Company recognized revenue under the Collaboration Agreement and the Amended Collaboration Agreement totaling approximately $5.2 million and $4.4 million, respectively. Included in the revenue recognized during the three and nine months ended September 30, 2017 is $2.5 million related to the July 2017 Juno Milestone Payment. Included in the revenue recognized during the nine months ended September 30, 2018 is approximately $3.0 million of additional revenue related to a cumulative catch-up adjustment associated with the Amended Collaboration Agreement. No revenue had been recognized through the date of the Amended Collaboration Agreement for the material rights performance obligations and there were no cumulative catch-up adjustments recorded for such performance obligations as a result of the Amended Collaboration Agreement. Amounts allocated to each of the material rights will be recognized as revenue prospectively when the material right has been exercised or when the respective option has lapsed.

The revenue is classified as collaboration and other research and development revenue in the accompanying condensed consolidated statements of operations. As of September 30, 2018 and December 31, 2017, there was approximately $33.2 million and $26.4 million of deferred revenue, respectively, related to the Amended Collaboration Agreement and the Collaboration Agreement, respectively, of which $32.6 million and $26.4 million was classified as long term, respectively, in the accompanying condensed consolidated balance sheets. In addition, as of December 31, 2017, the Company had recorded accounts receivable of $0.5 million related to reimbursable research and development costs under the Collaboration Agreement for activities performed during the fourth quarter of 2017. There was no receivable balance as of September 30, 2018.

During the nine months ended September 30, 2018, the Company paid $1.7 million in sublicense fees that were owed to certain of the Company's licensors in connection with the Amended Collaboration Agreement, which the Company recorded as research and development expenses during such period. The Company did not pay any sublicense fees during the three months ended September 30, 2018 or during the three or nine months ended September 30, 2017 related to the Amended Collaboration Agreement.

Allergan Pharmaceuticals Strategic Alliance and Option Agreement

Summary of Agreement

In March 2017, the Company entered into a Strategic Alliance and Option Agreement with Allergan to discover, develop, and commercialize new gene editing medicines for a range of ocular disorders (the "Allergan Agreement"). Over a seven-year research term, Allergan will have an exclusive option to exclusively license from the Company up to five collaboration development programs for the treatment of ocular disorders (each a "CDP"), including the Company's Leber Congenital Amaurosis type 10 program (the "LCA10 Program").

Under the Allergan Agreement, the Company will use commercially reasonable efforts to develop at least five CDPs and deliver preclinical results and data meeting specified criteria with respect to each CDP (each, an "Option Package" and such criteria, the "Option Package Criteria") to Allergan. The list of proposed targets that may be subject to a CDP may be amended from time to time by mutual agreement of the Company and Allergan. The Company is responsible for the preparation and delivery of a written development plan for each particular CDP setting forth the discovery and research activities to be conducted which is subject to the approval of the alliance steering committee that was formed under the Allergan Agreement, comprised of three members from each of the Company and Allergan (the "Steering Committee"). The Company will maintain primary responsibility for the development efforts under each CDP. The Company is responsible for all research and development costs prior to the achievement of the Option Package Criteria. Allergan will have the ability for a defined period of time ("Initial Option Period") to exercise an option (each, an "Option") to obtain a world-wide right and license to the Company's background intellectual property and the Company's interest in the CDP intellectual property to develop, commercialize, make, have made, use, offer for sale, sell, and import any gene editing therapy product that results from such CDP during the term of the Allergan Agreement (a "Licensed Product") in any category of human diseases and conditions other than the diagnosis, treatment or prevention of any cancer in humans through the use of engineered T-cells and subject to specified other limitations. Allergan has the option to extend the Initial Option Period and require the Company to perform additional research and development services, subject to the payment of additional consideration. After exercise of an Option with respect to a CDP, with the exception of any CDP's where the Company has exercised its profit-sharing option, Allergan will be responsible for all development, manufacturing, and commercialization activities in connection with licensed products arising from such CDP, other than with respect to the LCA10 Program, if LCA10 is designated as a CDP. In July 2018, Allergan exercised its Option with respect to the LCA10 Program. In connection with such exercise, Allergan paid the Company $15.0 million (the "LCA10 Option Exercise Payment"). Following such exercise, the Company exercised its Profit-Share Election with respect to the LCA10 Program. Following such election, the LCA10 Program became subject to a Profit-Sharing Arrangement and, as of September 30, 2018, the parties have not yet entered into a separate profit-sharing agreement with respect to the Profit-Sharing Arrangement.

The initial term of the Allergan Agreement commenced on March 14, 2017 and continues for seven years ending on March 14, 2024 (the "Research Term"). If the Company has not delivered an Option Package, which includes the results and data from the CDP, for five CDPs that satisfy the Option Package Criteria, then the Research Term will automatically extend by one-year increments until such obligation is satisfied, up to a maximum of ten years from March 2017.

The activities under the Allergan Agreement during the Research Term will be governed by the Steering Committee. The Steering Committee will review and monitor the direction of the development plan, evaluate and determine which targets are selected to become CDP, establish the Option Package Criteria for each CDP and evaluate the achievement of such criteria as well as oversee the development and commercialization activities after Allergan has licensed a CDP.

Under the terms of the Allergan Agreement, the Company received a $90.0 million up-front, non-refundable, non-creditable cash payment (the "Allergan Upfront") related to the Company's research and development costs for Option Packages for at least five CDPs and for reimbursement of the Company's past out of pocket costs with respect to the prosecution and defense of patents that it owns and in-licenses. Allergan has the option to purchase at least five development and commercialization licenses associated CDP that have satisfied the Option Package Criteria. The option exercise fee during the Initial Option Period is $15.0 million per CDP. If Allergan elects to extend the Initial Option Period, Allergan is required to pay an additional fee of $5.0 million to extend the option, at which point the Company is required to perform additional research services. If Allergan elects to exercise its option to a development and commercialization license after extending the Initial Option Period, Allergan must pay the Company the option exercise fee of $22.5 million, plus specified costs incurred by the Company in connection with the additional development work.

Following the exercise by Allergan of an Option with respect to a CDP, Allergan would be required to make certain milestone payments to the Company upon the achievement of specified development, product approval and launch and commercial events, on a CDP by CDP basis. On a CDP by CDP basis, for the first product in the first field to achieve the associated event, the Company is eligible to receive up to an aggregate of $42 million for development milestone payments and $75.0 million for product approval and launch milestone payments, in each case, for an indication in the field per CDP. In addition, the Company is eligible to receive additional development and product approval and launch milestone payments for subsequent products developed within two additional fields. The Company is also eligible for up to $90 million in sales milestone payments on a CDP by CDP basis, associated with aggregate worldwide sales. Certain product approval milestones are subject to certain reductions under specified circumstances, including for payments required to be made by Allergan to obtain certain third party intellectual property rights. In addition, within 45 days of the acceptance by the applicable regulatory authority of the Company's submission of an IND application with respect to the LCA10 Program, Allergan is required to pay the Company a one-time payment of $25.0 million (the "LCA10 IND Payment"). As of September 30, 2018, the next potential milestone payment that the Company may be entitled to receive under the Allergan Agreement is a milestone payment of $8.0 million for the achievement of certain development criteria.

With respect to the LCA10 Program, and up to one other CDP of the Company's choosing, following the exercise by Allergan of its Option to such programs the Company will have the right to elect to participate in a profit-sharing arrangement with Allergan in the United States, on terms mutually agreed by the Company and Allergan and subject to a right of Allergan to reject such election under certain circumstances, under which the Company and Allergan would share equally in net profits and losses on specific terms to be agreed between the Company and Allergan, in lieu of Allergan paying royalties on net sales of any applicable Licensed Products in the United States, and in such event Allergan's milestone payment obligations would be reduced, with the Company being eligible to receive development and product approval and launch milestone payments up to a low nine-digit amount in the aggregate and further sales milestone payments up to a high-eight digit amount in the aggregate, subject to reduction under certain circumstances (such right, the "Profit-Share Election," and such arrangement, a "Profit-Sharing Arrangement"). If the Company elects to participate in a profit-sharing arrangement, the Company is obligated to reimburse Allergan for half of the development costs incurred by Allergan with respect to the applicable CDP, and Allergan will retain control of all development and commercialization activities for the applicable Licensed Products.

In addition, to the extent there is any Licensed Product, the Company would be entitled to receive tiered royalty payments of high single digits based on a percentage of net sales of such Licensed Product, subject to certain reductions under specified circumstances, and the Company will remain obligated to pay all license fees, milestone payments, and royalties due to its upstream licensors based on Allergan's exercise of its license rights with respect to Licensed Products. However, if a Licensed Product is subject to a profit-sharing agreement the royalties will only be paid on ex-U.S. net sales. Royalties are due on a Licensed Product-by-Licensed Product and country-by-country basis from the date of the first commercial sale of each Licensed Product in a country until the later of: (i) the tenth anniversary of the first commercial sale of such Licensed Product in such country, (ii) the expiration date in such country of the last to expire valid claim within the licensed intellectual property covering the manufacture, use or sale of such Licensed Product in such country and (iii) the expiration of an exclusive legal right granted by the regulatory authority in such country to market and sell such Licensed Product.

Unless earlier terminated, the Allergan Agreement will terminate upon (i) the expiration of the Research Term, if Allergan does not exercise an Option, (ii) on a Licensed Product-by-Licensed Product and country-by-country basis, on the date of the expiration of all payment obligations under the Allergan Agreement with respect to such Licensed Product in such country or (iii) in its entirety upon the expiration of all payment obligations with respect to the last Licensed Product in all countries, unless terminated earlier due to the early termination provisions. Either party may terminate the Allergan Agreement if the other party has materially breached or defaulted in the performance of any of its material obligations and such breach or default continues after the specified cure period. During the Research Term, Allergan will have the right to terminate the Allergan Agreement on a CDP by CDP basis in the event of a change in control of the Company or for all CDPs, provided that Allergan will not have any right to exercise an Option for any CDPs following such termination. After the exercise of an Option, Allergan will have the right, at its sole discretion, to terminate the Allergan Agreement, on a CDP by CDP basis, upon 90 days' written notice. The Company may terminate the Allergan Agreement in the event that Allergan brings, assumes, or participates in, or knowingly, willfully or recklessly assists in bringing a dispute or challenge against the Company related to its intellectual property. Lastly, Allergan may terminate the Allergan Agreement with respect to a CDP if a safety concern, as specified in the Allergan Agreement, arises.

Termination of the Allergan Agreement for any reason will not release either party from any liability which, at the time of such termination, has already accrued to the other party or which is attributable to a period prior to such termination. In addition, termination of the Allergan Agreement will not preclude either party from pursuing any rights and remedies it may have under the agreement or at law or in equity with respect to any breach of the Allergan Agreement. If Allergan terminates the Allergan Agreement as a result of the Company's uncured material breach or default, then: (i) the licenses and rights conveyed to Allergan will continue as set forth in the agreement for any CDP Allergan has already licensed and (ii) Allergan's obligations related to milestones and royalties will continue as set forth in the agreement. If the Allergan Agreement is terminated for any other reason, then the options and licenses conveyed to Allergan under the agreement will terminate.

Accounting Analysis

Under the Allergan Agreement, the Company has identified a single performance obligation that includes (i) the research and development services during the Research Term (the "Allergan R&D Services"), and (ii) Steering Committee services during the Research Term (the "ASC Services"). The Company has concluded that the Allergan R&D Services is not distinct from the ASC Services during the Research Term. The Steering Committee provides oversight and management of the overall Allergan Agreement, and the members of the Steering Committee from the Company have specialized industry knowledge, particularly as it relates to genome editing technology. The Steering Committee is meant to facilitate the early stage research being performed and coordinate the activities of both the Company and Allergan. Further, the Steering Committee services are critical to the selection of a CDP, the ongoing evaluation of a CDP and the development and evaluation of the Option Package Criteria. Accordingly, the Company's participation on the Steering Committee is essential to Allergan receiving value from the Allergan R&D Services and as such, the ASC Services along with the Allergan R&D Services are considered one performance obligation (the "CDP Services"). In addition, the Company has concluded that the option to purchase five development and commercialization licenses is considered a marketing offer as the options did not provide any discounts or other rights that would be considered a material right in the arrangement.

As of January 1, 2018, the date of the initial application of ASC 606 by the Company, the total transaction price was determined to be $90.0 million, consisting solely of the upfront non-refundable, non-creditable cash payment. The Company also utilized the most likely amount method to estimate any development and regulatory milestone payments to be received. As of January 1, 2018, there were no milestones included in the transaction price. The Company considered the stage of development and the risks associated with the remaining development required to achieve the milestone, as well as whether the achievement of the milestone is outside the control of the Company or Allergan. The LCA10 IND Payment and remaining milestone payments were fully constrained, as a result of the uncertainty whether any of the milestones would be achieved as of September 30, 2018. The Company has determined that any commercial milestones and sales-based royalties will be recognized when the related sales occur and therefore have also been excluded from the transaction price. The Company will re-evaluate the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur. There were no changes to the

transaction price during the nine months ended September 30, 2018.

The Company will recognize revenue related to the CDP Services as the underlying services are performed using a proportional performance model. The Company measures proportional performance based on full time employee hours relative to projected full time employee hours to complete the research service.

During the three and nine months ended September 30, 2018, the Company recognized revenue under the Allergan Agreement of approximately $13.8 million and $16.7 million, respectively, inclusive, in each case, of the LCA10 Option Exercise Payment which the Company recognized upon the grant to Allergan of the right to use intellectual property associated with the development and commercialization license for LCA10 and final decision making authority with respect to the LCA10 Program. The LCA10 Option Exercise Payment recognized during the three months ended September 30, 2018 was partially offset by an update in the Company's revenue recognition model to reflect the expected level of the Company's effort required to develop the remaining CDPs. During the three and nine months ended September 30, 2017, the Company recognized revenue under the Allergan Agreement of approximately $3.2 million and $5.6 million, respectively. As of September 30, 2018 and December 31, 2017, there was $79.1 million and $81.2 million of deferred revenue related to the Allergan Agreement, respectively, of which $71.5 million and $68.3 million is classified as long-term on the condensed consolidated balance sheet, respectively.

As part of the Profit-Sharing Arrangement, the Company and Allergan will equally split U.S. profits and losses for the LCA10 Program in the United States and will co-develop the LCA10 Program in the United States. The Company accounts for the Profit-Sharing Arrangement with respect to the LCA10 Program within the scope of ASC Topic 808, *Collaborative Arrangements*, given that both the Company and Allergan are active participants in future research and development activities and both parties are exposed to significant risks and rewards dependent on the commercial success of such activities. During the three and nine months ended September 30, 2018, the Company and Allergan incurred $2.8 million in expense associated with the LCA10 Program, of which the Company recognized $1.1 million in contra research and development expenses during such period. The reimbursement is classified as prepaid expenses and other current assets in the condensed consolidated balance sheet as of September 30, 2018.

During the three and nine months ended September 30, 2018, the Company accrued $2.3 million in sublicense fees that were owed to certain of the Company's licensors in connection with the LCA10 Option Exercise Payment, which the Company recorded as research and development expenses during such period. During the three and nine months ended September 30, 2017, the Company recorded $6.7 million and $14.1 million, respectively, in sublicense fees that were owed to certain of the Company's licensors in connection with the Allergan Upfront, which the Company recorded as research and development expenses during such period.

Broad Sponsored Research Agreement

Summary of Agreement

The Sponsored Research Agreement provides for Broad to conduct research useful or relevant to genome editing in the field of genomic medicines for the prevention or treatment of human disease with funding from the Company. Under the Sponsored Research Agreement, Broad granted to the Company an exclusive right of first negotiation for licenses from Broad with respect to patentable inventions developed by Broad in the course of the sponsored research, subject to certain limitations and retained rights ("Sponsored Invention Licenses").

Under the Sponsored Research Agreement, the Company is obligated to make Market Cap Research Funding payments in the event the Company's market capitalization reaches specified thresholds ranging from a mid-nine digit dollar amount to a low-eleven digit dollar amount or Company Sale Research Funding payments in the event of a Company sale for consideration ranging from a mid-nine digit dollar amount to a low-eleven digit dollar amount. In connection with entering into the Sponsored Research Agreement, the Company confirmed that the first two research payments of $5.0 million and $7.5 million, respectively, were due and payable to Broad. In connection with the Initial Research Payments, the Company issued promissory notes to Broad that it settled in common stock in June 2018 as discussed more fully in Note 7. The $12.5 million in research funding expense was recorded to research and development expenses during the three months ended June 30, 2018. Other than the Initial Research Payments, the

Company is not required to make additional Research Funding Payments if the Company, whether directly or through its affiliates or sublicensees, is not researching, developing, or commercializing products based on or incorporating inventions exclusively licensed to the Company from Broad under Sponsored Invention Licenses or based on or incorporating CRISPR technology owned, co-owned, or controlled by Broad and otherwise licensed to the Company, subject to certain exclusions (an "Applicable Product" and such exemption from payment, the "Funding Exemption"). In the event that the Company, whether directly or through its affiliates or sublicensees, later resumes research, development, or commercialization of an Applicable Product within a specified period of time, any Research Funding Payment that was not paid to Broad as a result of the Funding Exemption shall become payable. Under the Sponsored Research Agreement, the Company is obligated to pay up to $125.0 million to Broad in Research Funding, inclusive of the Initial Research Payments, and in no event shall the aggregate amount of all Research Funding Payments exceed such amount.

Unless the Company has undergone a change in control, Market Cap Research Funding is payable by the Company in cash, common stock, or in the form of promissory notes, which may be settled in shares of common stock at the election of the Company, as discussed more fully in Note 7. Following a change in control of the Company, Company Sale Research Funding is required to be made in cash. The Sponsored Research Agreement is terminable by each party upon the occurrence of specified bankruptcy events of the other party and otherwise will continue in effect until the later of the expenditure of all Research Funding Payments by Broad and such time as the Company has no further rights of first negotiation for Sponsored Invention Licenses, unless otherwise mutually agreed between the parties.

Beam Therapeutics License Agreement

Summary of Agreement

In May 2018, the Company entered into a license agreement with Beam (the "Beam License Agreement"). Beam is a biotechnology company focused on developing precision genetic medicines using technology that converts a single nucleobase into a different nucleobase ("Base Editing"). Pursuant to the Beam License Agreement, the Company granted to Beam licenses and options to acquire licenses to certain intellectual property rights owned or controlled by the Company, for specified uses. More specifically, the Company granted to Beam a worldwide, exclusive (subject to certain exceptions), sublicensable (subject to certain conditions), license under certain intellectual property controlled by the Company for the use of Base Editing therapies for the treatment of any field of human diseases and conditions, subject to certain exceptions (the "Beam Field," and the licenses granted or to be granted under the Beam License Agreement, the "Beam Development and Commercialization License"). Additionally, the Company granted to Beam a royalty-free, non-exclusive license under certain intellectual property owned or controlled by the Company to perform research activities in the Beam Field (the "Beam Research License"). The Company provided Beam with an exclusive option to obtain a Beam Development and Commercialization License to three additional groups of intellectual property owned or controlled by the Company, on a group by group basis, during the specified option period, subject to certain exceptions. Pursuant to the Beam License Agreement, Beam will use commercially reasonable efforts to develop a product that includes the rights licensed to Beam within a specified period of time and to commercialize any such product that have received regulatory approval in certain specified countries.

As consideration for the license and option rights granted to Beam, the Company received a nominal one-time, non-refundable, non-creditable upfront cash payment. The Company also received non-cash consideration, consisting of a low to mid-single digit million number of shares of Beam Series A-1 and A-2 preferred stock, having an aggregate fair value of approximately $3.6 million. The Company is eligible to receive additional consideration if Beam elects to exercise its option to obtain a Beam Development and Commercialization License to the three categories of intellectual property underlying the Research License, for a fee ranging from a mid-teen million dollar amount to a low to mid-eight digit dollar amount per group, depending on the timing of the option exercise. Additionally, Beam is required to reimburse the Company for certain payments the Company may be obligated to make under the Company's existing license agreements related to the intellectual property being licensed to Beam, including (i) development, regulatory and commercial milestone payments and certain sublicense income payments due as a result of the Beam License Agreement and (ii) a percentage of the annual maintenance fees and patent fees due to certain of the Company's licensors. In addition, to the extent any products are commercialized under a Beam Development and Commercialization License, the Company would be entitled

to receive royalty payments equivalent to the royalties that would be due from the Company to any applicable licensors of the Company related to the sales of such licensed products, plus an additional low single-digit percentage royalty. Additionally, if Beam exercises its right to obtain a Beam Development and Commercialization License to one of the categories of optioned intellectual property comprising Company-owned intellectual property and any related licensed products that are commercialized, the Company would be entitled to tiered low single-digit royalty payments related to sales of such licensed products.

The license rights and option rights granted to Beam are subject to the terms and conditions of the underlying license agreements that the Company is a party to and under which the Company licensed rights or option rights to Beam and the termination of such in-licenses, as applicable. Unless earlier terminated by either party pursuant to the terms of the agreement, the Beam License Agreement will continue in full force and effect and will expire on a licensed product-by-licensed product and country-by-country basis upon the expiration of the royalty term with respect to such licensed product in such country. Beam has the right, at its sole discretion, at any time to terminate the Beam License Agreement in its entirety or on a group-by-group of intellectual property basis, upon ninety days written notice to the Company. Upon termination of the Beam License Agreement, all rights and licenses granted by the Company to Beam (including the rights to exercise options and obtain such licenses) will immediately terminate and patents within a group of patents will no longer be deemed licensed patents. Expiration or termination of the Beam License Agreement for any reason does not release either party of any obligation or liability which had accrued or which is attributable to a period prior to such expiration or termination.

Accounting Analysis

The Company has identified the following performance obligations (i) the Beam Development and Commercialization License and (ii) the Beam Research License. In addition, the Company has concluded the option to obtain additional Beam Development and Commercialization Licenses to up to three additional groups of patents in the future is considered a marketing offer as the options did not provide any discounts or other rights that would be considered a material right in the arrangement.

The total transaction price at the inception of the arrangement was determined to be approximately $3.8 million, consisting of the upfront cash payment and non-cash consideration related to the shares of Beam preferred stock. The Company determined the fair value based on the price paid by other unrelated investors for such shares. The consideration associated with the exercise of the option(s) will be accounted for if and when Beam elects to purchase the additional licenses. The other forms of consideration, including the development and regulatory milestone reimbursement, the sublicense income reimbursement, the maintenance fee reimbursement and the patent costs reimbursement were estimated based on the most-likely amount and were excluded from the initial transaction price as the most-likely amount was estimated to be zero or the amount was otherwise fully constrained due to the significant uncertainties surrounding such payments. The commercial-based milestone reimbursement and the sales-based royalty payments will be recognized when the related sales occur as they were determined to relate predominantly to the licenses granted and therefore have also been excluded from the transaction price.

The total transaction price at the inception of the arrangement was allocated to the performance obligations in the aggregate, as the Beam Development and Commercialization License and the Beam Research License were delivered simultaneously with one another, at inception of the arrangement, when the licenses were made available for Beam’s use and benefit. Accordingly, the satisfaction of each performance obligation occurs at inception of the arrangement and the transaction price at the inception of the arrangement is recognized in its entirety at such time. The Company will re-evaluate the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur. There were no changes to the transaction price during the three or nine months ended September 30, 2018.

During the three and nine months ended September 30, 2018, the Company recognized revenue under the Beam License Agreement of approximately $0.1 million and $4.0 million, respectively. The revenue is classified as collaboration and other research and development revenue in the accompanying condensed consolidated statement of operations and the Beam preferred stock is classified in restricted cash and other non-current assets.

Other Agreements

Licensing Agreements

The Company is a party to a number of license agreements under which the Company licenses patents, patent applications and other intellectual property from third parties. The following is a summary of such in-license agreements that are significant to the Company's business.

Massachusetts General Hospital Agreements

In August 2014, the Company entered into an agreement to license certain patent rights owned or co-owned by MGH. Consideration for the granting of the license included the payment of an upfront license fee of $0.1 million, the issuance of 66,848 shares of the Company's common stock, which was based on 0.5% of the Company's outstanding stock on a fully diluted basis, and the right to receive future issuances of shares of common stock to maintain MGH's ownership following the third tranche of the Company's Series A redeemable convertible preferred stock financing (i.e. anti-dilution protection liability), which was settled in June 2015. MGH is entitled to receive nominal annual license fees and future clinical, regulatory and commercial milestone payments in an aggregate maximum amount of $3.7 million and an aggregate amount of $1.8 million upon the occurrence of certain sales milestones. The Company is also obligated to pay MGH low single digit percentage royalties on net sales of products for the prevention or treatment of human disease and ranging from low single digit to low double digit percentage royalties on net sales of other products and services made by the Company, its affiliates or its sublicenses. The royalty percentage depends on the product and service, and whether such licensed product or licensed service is covered by a valid claim within the certain patent rights that the Company licenses from MGH.

In August 2016, the Company entered into a license agreement with MGH (the "2016 MGH Agreement") to license certain patent rights owned or co-owned by MGH (the "Additional MGH Patent Rights"). Consideration for granting the license included the payment of an upfront nonrefundable license fee of $0.8 million, which the Company recorded as research and development expense in 2016. Under the 2016 MGH Agreement, MGH is entitled to nominal annual license fees, clinical and regulatory milestone payments totaling less than $1.0 million in the aggregate per licensed product up to four licensed products or processes to achieve the specified clinical and regulatory milestones, and commercial sales milestone payments totaling up to $4.9 million in the aggregate, consisting of milestone payments due upon the first commercial sales for up to four licensed products or processes and milestone payments due upon annual net sales of products or processes meeting specified thresholds. The Company is also obligated to pay MGH royalties of less than 1% on net sales of products and processes for the prevention or treatment of human disease, and royalties of a low single-digit percentage on net sales of products and processes for the prevention or treatment of a non-human animal disease, made by the Company, its affiliates, or its sublicensees. The royalty percentages that the Company is obligated to pay are subject to reduction if at the time of sale the applicable product or process is not covered by a valid claim within the Additional MGH Patent Rights. Under the 2016 MGH Agreement, the Company is obligated to reimburse MGH for all patent costs and future reasonable costs associated with the prosecution, filing, and maintenance of the licensed patents.

MGH is also entitled under the 2016 MGH Agreement to receive payments of up to $6.0 million in the event the Company's market capitalization reaches specified thresholds meeting or exceeding $1.0 billion, on or prior to the expiration or termination of the 2016 MGH Agreement (or if earlier, a Company sale) ("MGH Market Cap Success Payments") or a Company sale for consideration in excess of those thresholds ("MGH Company Sale Success Payments"). Additional MGH Market Cap Success Payments become payable, and the amount of potential MGH Company Sale Success Payments would increase further, if the Company's market capitalization reaches additional higher thresholds and the Company has at least one product candidate that is covered by a claim of an Additional MGH Patent Right and that (i) is the subject of a Phase 1 clinical trial of which the Company or an affiliate or sublicensee of the Company is the sponsor, (ii) was the subject of a Phase 1 clinical trial of which the Company or an affiliate or sublicensee of the Company was the sponsor with the Company having determined to conduct a subsequent clinical trial with respect to such product candidate, or (iii) has been approved for sale in either the United States or European Union. MGH Market Cap Success Payments are payable in cash or shares of Company common stock at the Company's

discretion, and MGH Company Sale Success Payments are payable solely in cash. The Company triggered the first MGH Market Cap Success Payment under the 2016 MGH Agreement during the fourth quarter of 2017 when the Company's market capitalization reached $1.0 billion, as discussed more fully in Note 7.

Cas9-I License Agreement

In October 2014, the Company entered into an agreement (the "Cas9-I License Agreement") with Broad and Harvard to license certain patent rights owned or co-owned by, or among, Broad, the Massachusetts Institute of Technology ("MIT"), and Harvard (collectively, the "Institutions"). Consideration for the granting of the license included the payment of an upfront license issuance fee of $0.2 million and the issuance of 561,531 shares of the Company's common stock. The Institutions are collectively entitled to receive clinical and regulatory milestone payments totaling up to $14.8 million in the aggregate per licensed product approved in the United States, European Union, and Japan for the treatment of a human disease that afflicts at least a specified number of patients in the aggregate in the United States. If the Company undergoes a change of control during the term of the license agreement, the clinical and regulatory milestone payments will be increased by a certain percentage in the mid-double digits. The Company is also obligated to make additional payments to the Institutions, collectively, of up to an aggregate of $54.0 million upon the occurrence of certain sales milestones per licensed product for the treatment of a human disease that afflicts at least a specified number of patients in the aggregate in the United States. The Institutions are collectively entitled to receive clinical and regulatory milestone payments totaling up to $4.1 million in the aggregate per licensed product approved in the U.S. and at least one jurisdiction outside the U.S. for the treatment of a human disease based on certain criteria. The Company is also obligated to make additional payments to the Institutions, collectively, of up to an aggregate of $36.0 million upon the occurrence of certain sales milestones per licensed product for the treatment of a rare disease meeting certain criteria. The Institutions are entitled to receive from the Company nominal annual license fees and a mid-single digit percentage royalties on net sales of products for the prevention or treatment of human disease and ranging from low single digit to high single digit percentage royalties on net sales of other products and services, made by the Company, its affiliates, or its sublicensees. The royalty percentage depends on the product and service, and whether such licensed product or licensed service is covered by a valid claim within the certain patent rights that the Company licenses from the Institutions.

In December 2016, the Company entered into the Cpf1 License Agreement with Broad, for specified patent rights (the "Cpf1 Patent Rights") related primarily to Cpf1 compositions of matter and their use for gene editing. Concurrently with entering into the Cpf1 License Agreement, the Company, Broad, and Harvard amended and restated the Cas9-I License Agreement as described below and the Company and Broad entered into the Cas9-II License Agreement for specified patent rights (the "Cas9-II Patent Rights") related primarily to certain Cas9 compositions of matter and their use for genome editing. The Company paid an upfront fee in aggregate of $16.5 million, which included the Initial Notes, under these agreements which was recorded in research and development expenses during 2016.

Cpf1 License Agreement

Pursuant to the Cpf1 License Agreement, Broad, on behalf of itself, Harvard, MIT, Wageningen, and the University of Tokyo ("UTokyo" and, together with Broad, Harvard, MIT, and Wageningen, the "Cpf1 Institutions") granted the Company an exclusive, worldwide, royalty-bearing, sublicensable license to the Cpf1 Patent Rights, to make, have made, use, have used, sell, offer for sale, have sold, export and import products in the field of the prevention or treatment of human disease using gene therapy, editing of genetic material, or targeting of genetic material, subject to certain limitations and retained rights (collectively, the "Cpf1 Exclusive Field"), as well as a non-exclusive, worldwide, royalty-bearing sublicensable license to the Cpf1 Patent Rights for all other purposes, subject to certain limitations and retained rights. The Company is obligated to use commercially reasonable efforts to research, develop, and commercialize products in the Cpf1 Exclusive Field. The Company is also required to achieve certain development milestones within specified time periods for products covered by the Cpf1 Patent Rights, with Broad having the right to terminate the Cpf1 License Agreement if the Company fails to achieve these milestones within the required time periods.

Broad and Wageningen are collectively entitled to receive clinical and regulatory milestone payments totaling up to $20.0 million in the aggregate per licensed product approved in the United States, European Union, and Japan for the prevention or treatment of a human disease that afflicts at least a specified number of patients in the aggregate in the

United States. The Company is also obligated to make additional payments to Broad and Wageningen, collectively, of up to an aggregate of $54.0 million upon the occurrence of certain sales milestones per licensed product for the prevention or treatment of a human disease that afflicts at least a specified number of patients in the aggregate in the United States. Broad and Wageningen are collectively entitled to receive clinical and regulatory milestone payments totaling up to $6.0 million in the aggregate per licensed product approved in the United States, European Union and Japan for the prevention or treatment of a human disease that afflicts fewer than a specified number of patients in the aggregate in the United States or a specified number of patients per year in the United States (an "Ultra-Orphan Disease"). The Company is also obligated to make additional payments to Broad and Wageningen, collectively, of up to an aggregate of $36.0 million upon the occurrence of certain sales milestones per licensed product for the prevention or treatment of an Ultra-Orphan Disease.

Broad and Wageningen, collectively, are entitled to receive, on a product-by-product and country-by-country basis, mid single-digit percentage royalty on net sales of licensed products for the prevention or treatment of human disease, and royalties on net sales of other licensed products and licensed services, made by the Company, its affiliates, or its sublicensees. The royalty percentage depends on the product and service, and whether such licensed product or licensed service is covered by a valid claim within the Cpf1 Patent Rights. If the Company is legally required to pay royalties to a third party on net sales of the Company's products because such third party holds patent rights that cover such licensed product, then the Company can credit up to a specified percentage of the amount paid to such third party against the royalties due to Broad and Wageningen in the same period. Such credit may not exceed 50% of the applicable royalties paid by the Company to the applicable third party. The Company's obligation to pay royalties will expire on a product-by-product and country-by-country basis upon the later of the expiration of the last to expire valid claim of the Cpf1 Patent Rights that covers each licensed product or service in each country or the tenth anniversary of the date of the first commercial sale of the licensed product or licensed service. If the Company sublicenses any of the Cpf1 Patent Rights to a third party, Broad and Wageningen, collectively, have the right to receive sublicense income, depending on the stage of development of the products or services in question at the time of the sublicense.

Under the Cpf1 License Agreement, Broad and Wageningen are also entitled, collectively, to receive success payments in the event the Company's market capitalization reaches specified thresholds (the "Cpf1 Market Cap Success Payments") or a Company sale for consideration in excess of those thresholds (the "Cpf1 Company Sale Success Payments" and, collectively with the Cpf1 Market Cap Success Payments, the "Cpf1 Success Payments"). The Cpf1 Success Payments payable to Broad and Wageningen are triggered when the Company's market capitalization reaches certain amounts ranging from $750.0 million to $10.0 billion for a specified period of time, and collectively the Cpf1 Success Payments will not exceed, in aggregate, $125.0 million, which maximum amount would be payable only if the Company reaches a market capitalization threshold of $10.0 billion and has at least one product candidate covered by a claim of a patent right licensed to the Company under either the Cpf1 License Agreement or the Cas9-I License Agreement that is or was the subject of a clinical trial pursuant to development efforts by the Company or any Company affiliate or sublicensee. The Cpf1 Market Cap Success Payments are payable by the Company in cash or in the form of promissory notes on substantially the same terms and conditions as the Initial Notes, as described more fully in Note 7, except that the maturity date of such notes will, subject to certain exceptions, be 150 days following issuance. Following a change in control of the Company, Cpf1 Market Cap Success Payments are required to be made in cash. Cpf1 Company Sale Success Payments are payable solely in cash. The Company triggered the first and second Cpf1 Success Payments during 2017 when the Company's market capitalization reached $750 million and $1.0 billion, respectively, as described more fully in Note 7.

Unless terminated earlier, the term of the Cpf1 License Agreement will expire on a country-by-country basis, upon the expiration of the last to expire valid claim of the Cpf1 Patent Rights in such country. The Company has the right to terminate the Cpf1 License Agreement at will upon four months' written notice to Broad. Either party may terminate the Cpf1 License Agreement upon a specified period of notice in the event of the other party's uncured material breach of a material obligation, such notice period varying depending on the nature of the breach. Broad may terminate the Cpf1 License Agreement immediately if the Company challenges the enforceability, validity, or scope of any Cpf1 Patent Right or assist a third party to do so, or in the event of the Company's bankruptcy or insolvency.

Amendment and Restatement of Cas9-I License Agreement

In December 2016, the Company amended and restated the Cas9-I License Agreement (such agreement, as amended, the "Amended and Restated Cas9-I License Agreement") to exclude additional fields from the scope of the exclusive license previously granted to the Company, to make the exclusive license to three targets become non-exclusive, subject to the limitation that each of Broad and Harvard would only be permitted to grant a license to only one third party at a time with respect to each such target within the field of the exclusive license, and to revise certain provisions relating to the rights of Harvard and Broad to grant further licenses under specified circumstances to third parties that wish to develop and commercialize products that target a particular gene and that otherwise would fall within the scope of the exclusive license under this agreement, so that Harvard and Broad together would have rights substantially similar to the equivalent rights possessed by Broad under the Cpf1 License Agreement to designate gene targets for which the designating institution, whether alone or together with an affiliate or third party, has an interest in researching and developing products that would otherwise be covered by rights licensed by Harvard and/or Broad to the Company under this agreement, the Cpf1 License Agreement or the Cas9-II License Agreement. In March 2017, the Company and Harvard and Broad further amended the Amended and Restated Cas9-I License Agreement to (i) grant an exclusive license from Broad to the Company with respect to certain patent rights that The Rockefeller University ("Rockefeller") has or may have rights in and to and for which Rockefeller has, under a certain inter-institutional agreement that Broad and Rockefeller entered into in February 2017, appointed Broad as sole and exclusive agent for the purposes of licensing and (ii) provide to Rockefeller certain rights, including with respect to patent enforcement, indemnification, insurance, confidentiality, reservation of certain rights, and publicity, that are generally consistent with those granted to Broad, Harvard, MIT and the Howard Hughes Medical Institute under the Amended and Restated Cas9-I License Agreement.

Cas9-II License Agreement

Pursuant to the Cas9-II License Agreement, Broad, on behalf of itself, MIT, Harvard, and the University of Iowa Research Foundation, granted the Company an exclusive, worldwide, royalty bearing sublicensable license to certain of the Cas9-II Patent Rights as well as a non-exclusive, worldwide, royalty-bearing sublicensable license to all of the Cas9-II Patent Rights, in each case on terms substantially similar to the licenses granted to the Company under the Cpf1 License Agreement except, among other things, for the following commitment amounts. Under the Cas9-II License Agreement, the Company will pay an upfront license fee in a low seven digit dollar amount and will have to pay an annual license maintenance fee. The Company is obligated to pay clinical and regulatory milestone payments per licensed product approved in the United States, European Union and Japan for the prevention or treatment of a human disease that afflicts at least a specified number of patients in the aggregate in the United States totaling up to $3.7 million in the aggregate, and sales milestone payments for any such licensed product totaling up to $13.5 million in the aggregate. In addition, the Company is obligated to pay clinical and regulatory milestone payments totaling up to $1.1 million in the aggregate per licensed product approved in the United States and the European Union or Japan for the prevention or treatment of a human disease that afflicts fewer than a specified number of patients in the United States, plus sales milestone payments of up to $9.0 million for any such licensed product. Consistent with the Cpf1 License Agreement, the licensors are entitled to royalties on net sales of products for the prevention or treatment of human disease and other products and services made by the Company, its affiliates, or its sublicensees. Royalties due under other license agreements are creditable against these royalties up to a specified amount in the same period. Lastly, Broad is entitled to receive success payments if the Company's market capitalization reaches specified thresholds ascending from $1.0 billion to $9.0 billion or upon a sale of the Company for consideration in excess of those thresholds. The potential success payments range from a low seven digit dollar amount to a low eight digit dollar amount and will not exceed, in aggregate, $30.0 million, which maximum amount would be owed only if the Company reaches a market capitalization threshold of $9.0 billion and has at least one product candidate covered by a claim of a patent right licensed to the Company under either the Cas9-I License Agreement or the Cas9-II License Agreement that is or was the subject of a clinical trial pursuant to development efforts by the Company or any Company affiliate or sublicensee. The Company triggered the first Success Payment under the Cas9-II Agreement during the fourth quarter of 2017 when the Company's market capitalization reached $1.0 billion, which the Company settled in January 2018, as more fully described in Note 7.

9. Stock-based Compensation

Total compensation cost recognized for all stock-based compensation awards in the Company's condensed consolidated statements of operations was as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Research and development	$ 3,506	$ 2,431	$ 11,412	$ 9,130
General and administrative	3,193	2,037	8,839	6,157
Total stock-compensation expense	$ 6,699	$ 4,468	$ 20,251	$ 15,287

Restricted Stock

From time to time, upon approval by the Company's board of directors, certain employees and advisors have been granted restricted shares of common stock. These shares of restricted stock are subject to repurchase rights. Accordingly, the Company has recorded the proceeds from the issuance of restricted stock as a liability in the condensed consolidated balance sheets included as a liability. The restricted stock liability is reclassified into stockholders' equity as the restricted stock vests. A summary of the status of and changes in unvested restricted stock as of December 31, 2017 and September 30, 2018 is as follows:

	Shares	Weighted Average Grant Date Fair Value Per Share
Unvested Restricted Common Stock as of December 31, 2017	513,225	$ 18.70
Issued	—	—
Vested	(225,225)	$ 6.75
Forfeited	—	—
Unvested Restricted Common Stock as of September 30, 2018	288,000	$ 28.05

For the nine months ended September 30, 2018, the expense for restricted stock awards related to non-employees and employees was $1.9 million and $0, respectively.

As of September 30, 2018, the Company had no unrecognized stock-based compensation expense related to its employee unvested restricted stock awards and $9.0 million in unrecognized stock-based compensation expense related to its non-employee unvested restricted stock awards.

Stock Options

Certain of the Company's stock option agreements allowed for the exercise of unvested awards. During 2014, options to purchase 75,304 shares of common stock for $0.03 per share were exercised prior to their vesting. The unvested shares were subject to repurchase by the Company if the employees ceased to provide service to the Company, with or without cause. As such, the Company did not treat the exercise of unvested options as a substantive exercise. The Company recorded the proceeds from the exercise of unvested stock options as a liability in the condensed consolidated balance sheets. The liability for unvested common stock subject to repurchase was reclassified into stockholders' equity as the shares vested. As of June 30, 2018, the early exercise stock options were fully vested.

The following is a summary of stock option activity for the nine months ended September 30, 2018:

	Shares	Weighted Average Exercise Price	Remaining Contractual Life (years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2017	4,372,136	$ 17.28	8.5	$ 60,591
Granted	1,643,185	$ 36.29	—	—
Exercised	(634,331)	$ 13.73	—	—
Cancelled	(558,504)	$ 24.88	—	—
Outstanding at September 30, 2018	4,822,486	$ 23.38	8.2	$ 48,750
Exercisable at September 30, 2018	1,881,620	$ 17.65	7.5	$ 28,201

The table above reflects restricted stock issued upon exercise of unvested stock options as exercised on the dates that the shares are no longer subject to repurchase. The Company had no unvested restricted common stock outstanding at September 30, 2018 and had 4,572 shares of unvested restricted common stock outstanding at December 31, 2017, resulting from the exercise of unvested stock options.

Using the Black-Scholes option pricing model, the weighted average fair value of options granted to employees and directors during the nine months ended September 30, 2018 and 2017 was $25.65 and $16.71, respectively. The expense related to options granted to employees and directors was $14.9 million and $9.1 million for the nine months ended September 30, 2018 and 2017, respectively.

The fair value of each option issued to employees and directors was estimated at the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Risk free interest rate	2.9 %	1.9 %	2.6 %	2.1 %
Expected dividend yield	—	—	—	—
Expected term (in years)	6.25	6.25	6.25	6.25
Expected volatility	77.3 %	78.0 %	79.8 %	77.9 %

There were no options issued to persons other than employees and directors during the nine months ended September 30, 2018. As of September 30, 2018, the Company had unrecognized stock-based compensation expense related to its employee and director stock options of $51.8 million which the Company expects to recognize over the remaining weighted average vesting period of 2.53 years.

10. Net Loss per Share

Basic net loss per common share is calculated by dividing the net loss attributable to common stockholders by the weighted average number of common shares outstanding during the period, without consideration for potentially dilutive securities. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted average number of common shares and potentially dilutive securities outstanding for the period determined using the treasury stock and if converted methods. Contingently issuable shares are included in the calculation of basic loss per share as of the beginning of the period in which all the necessary conditions have been satisfied. Contingently issuable shares are included in diluted loss per share based on the number of shares, if any, that would be issuable under the terms of the arrangement if the end of the reporting period was the end of the contingency period, if the results are dilutive.

For purposes of the diluted net loss per share calculation, stock options are considered to be common stock equivalents, but they were excluded from the Company’s calculation of diluted net loss per share allocable to common stockholders because their inclusion would have been anti-dilutive. Therefore, basic and diluted net loss per share applicable to common stockholders was the same for all periods presented.

Upon the closing of the 2018 January Offerings, the 2017 December Offering and the 2017 March Offering, the Company sold 1,429,205 shares, 2,265,500 shares and 4,600,000 shares of common stock, respectively. The issuance of these shares resulted in a significant increase in the Company's weighted-average shares outstanding for the nine months ended September 30, 2018 and 2017 and is expected to continue to impact the year-over-year comparability of the Company's net loss per share calculations for the next three months.

The following common stock equivalents were excluded from the calculation of diluted net loss per share allocable to common stockholders because their inclusion would have been anti-dilutive:

	As of September 30,	
	2018	2017
Unvested restricted common stock	288,000	260,784
Outstanding stock options	4,822,486	4,423,820
Total	5,110,486	4,684,604

The table above reflects restricted stock issued upon exercise of unvested stock options as exercised on the dates that the shares are no longer subject to repurchase.

11. Related-Party Transactions

The Company received $0.4 million and $0.6 million in rent and facility-related fees from a related party in the nine months ended September 30, 2018 and 2017, respectively.

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, 2017, which was filed with the Securities and Exchange Commission ("SEC") on March 8, 2018 (the "2017 10-K").

This Quarterly Report on Form 10-Q contains forward-looking statements that involve substantial risks and uncertainties. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. 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.

Overview

We are a leading genome editing company dedicated to developing transformative genomic medicines with the aim to treat a broad range of serious diseases. The promise of genomic medicines is supported by the advancing knowledge of the human genome, and harnessing the progress in technologies for cell therapy, gene therapy, and, most recently, genome editing. We believe this progress sets the stage for us to create unprecedented medicines with the potential to have a durable benefit for patients. At Editas Medicine, our core capability in genome editing uses the technology known as CRISPR (clustered, regularly interspaced, short palindromic repeats) with which we can create molecules that efficiently and specifically edit DNA. Our mission is to translate the promise of this science into a broad class of medicines to help people living with serious diseases around the world. To this end, we have developed a proprietary genome editing platform based on CRISPR technology and we continue to expand its capabilities. Our initial product development strategy is to primarily target genetically defined diseases with a focus on debilitating illnesses where there are poor or no approved treatments and where the genetic basis of disease is well understood. A genetically defined disease may be treated by correcting a disease causing gene, whereas a genetically treatable disease is a disease that does not necessarily have a single, disease causing gene, but which nonetheless may be treated by editing genes to ameliorate or eliminate the signs or symptoms of that disease. While our discovery efforts have ranged across several different diseases and therapeutic areas, the two areas where our programs are more mature are ocular diseases and engineered cell medicines. Our most advanced program is designed to address a specific genetic form of retinal degeneration called Leber Congenital Amaurosis type 10 ("LCA10"), a disease for which we are not aware of any available therapies and which we are aware of only one potential treatment in clinical trials in the United States and Europe. In October 2018, we filed an investigational new drug ("IND") application for the LCA10 program. As part of our long term strategy, we have developed and articulated goals for our pipeline of experimental medicines and our company that we are working to achieve by the end of 2022. These goals, which we call "EM22," include having at least three experimental medicines in early stage clinical trials and at least two additional experimental medicines in or ready for late stage clinical trials. In addition, we aim to have a pipeline characterized by potential best-in-class medicines and to be a company with the leading genome editing platform and organizational culture.

In May 2015, we entered into a collaboration with Juno Therapeutics, Inc., a Celgene company that is a wholly-owned subsidiary of Celgene Corporation ("Juno Therapeutics"), a leader in the emerging field of immuno-oncology, to develop novel engineered T cell therapies for cancer, which Juno Therapeutics and we amended and restated in May 2018. In March 2017, we entered into a strategic alliance and option agreement with Allergan Pharmaceuticals International Limited ("Allergan"), a wholly-owned subsidiary of Allergan plc, a leading global pharmaceutical company, to discover, develop, and commercialize new gene editing medicines for a range of ocular disorders. In July 2018, Allergan exercised its option to develop and commercialize the LCA10 program (the "LCA10 Program") and paid us $15.0 million in connection with such exercise (the "LCA10 Option Exercise Payment"). Following Allergan's exercise, we elected to exercise our U.S. profit-sharing option under which we will equally split profits and losses for the LCA10 Program in the United States with Allergan and will co-develop the LCA10 Program in the United States with Allergan pursuant to a profit-sharing agreement that we intend to enter into with Allergan regarding such profit-sharing and co-development.

Since our inception in September 2013, our operations have focused on organizing and staffing our company, business planning, raising capital, establishing our intellectual property portfolio, assembling our core capabilities in genome editing, seeking to identify potential product candidates, and undertaking preclinical studies. All of our research programs are still in the preclinical or research stage of development and their risk of failure is high. We have not generated any revenue from product sales. We have funded our operations primarily through the initial public offering of our common stock (the "IPO"), follow-on public offerings of our common stock including through an at-the-market offering, private placements of our preferred stock, payments received under our collaboration with Juno Therapeutics and payments received under our strategic alliance with Allergan. From inception through September 30, 2018, we raised an aggregate of $620.8 million to fund our operations.

Since inception, we have incurred significant operating losses. Our net losses were $84.9 million and $84.1 million for the nine months ended September 30, 2018 and 2017, respectively. As of September 30, 2018, we had an accumulated deficit of $391.2 million. We expect to continue to incur significant expenses and operating losses for the foreseeable future. Our net losses may fluctuate significantly from quarter to quarter and from year to year. We anticipate that our expenses will increase substantially as we continue our current research programs and our preclinical development activities; prepare for clinical development of our most advanced program; seek to identify additional research programs and additional product candidates; initiate preclinical testing and clinical trials for any product candidates we identify and develop; maintain, expand, and protect our intellectual property portfolio, including reimbursing our licensors for such expenses related to the intellectual property that we in-license from such licensors; further develop our genome editing platform; hire additional clinical, quality control, and scientific personnel; and incur additional costs associated with operating as a public company. We do not expect to be profitable for the year ending December 31, 2018 or the foreseeable future.

Financial Operations Overview

Revenue

To date, we have not generated any revenue from product sales and we do not expect to generate any revenue from product sales for the foreseeable future. In connection with entering into our collaboration with Juno Therapeutics in May 2015, we received an upfront payment of $25.0 million, and, in each of May 2016 and July 2017, we received a milestone payment of $2.5 million. In May 2018, in connection with the amendment and restatement of our collaboration agreement with Juno Therapeutics to expand our collaboration to add an additional research program, we received $5.0 million for amending the agreement and two $2.5 million milestone payments for technical progress in a research program (the "Juno Therapeutics Amendment Payments"). In addition, we will receive up to $22.0 million in research support over the five years of the collaboration and across the four programs under the collaboration, subject to adjustment in accordance with the terms of the agreement. Through September 30, 2018, we had recognized an aggregate of $16.5 million of research support from Juno Therapeutics since entering into the collaboration. During the nine months ended September 30, 2018, we recognized $5.2 million of research support from Juno Therapeutics. As of September 30, 2018, we recorded $33.2 million of deferred revenue, $32.6 million of which is classified as long-term on our condensed consolidated balance sheet, related to the collaboration. In connection with entering into our strategic alliance with Allergan, we received an upfront payment of $90.0 million from Allergan (such payment, the "Allergan

Upfront"). During the nine months ended September 30, 2018, we recognized $16.7 million in revenue related to our strategic alliance with Allergan, which includes the $15.0 million LCA10 Option Exercise Payment. As of September 30, 2018, we recorded $79.1 million of deferred revenue, $71.5 million of which is classified as long-term on the condensed consolidated balance sheet, related to the Allergan Upfront.

For the foreseeable future, we expect substantially all of our revenue will be generated from our collaboration with Juno Therapeutics, our strategic research alliance with Allergan, any other collaborations or agreements we may enter into and anticipated interest income.

Expenses

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for our research activities, including our drug discovery efforts and preclinical studies under our research programs, which include:

- employee-related expenses including salaries, benefits, and stock-based compensation expense;
- costs of funding research performed by third parties that conduct research and development and preclinical activities on our behalf;
- costs of purchasing lab supplies and non-capital equipment used in our preclinical activities and in manufacturing preclinical study materials;
- consultant fees;
- facility costs including rent, depreciation, and maintenance expenses; and
- fees for acquiring and maintaining licenses under our third-party licensing agreements, including any sublicensing or success payments made to our licensors.

Research and development costs are expensed as incurred. 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 any product candidates we may identify and develop. This is due to the numerous risks and uncertainties associated with developing such product candidates, including the uncertainty of:

- successful completion of preclinical studies, IND-enabling studies and natural history studies;
- successful enrollment in, and completion of, clinical trials;
- receipt of marketing approvals from applicable regulatory authorities;
- establishing commercial manufacturing capabilities or making arrangements with third-party manufacturers;
- obtaining and maintaining patent and trade secret protection and non-patent exclusivity;
- launching commercial sales of a product, if and when approved, whether alone or in collaboration with others;
- acceptance of a product, if and when approved, by patients, the medical community, and third-party payors;
- effectively competing with other therapies and treatment options;

- a continued acceptable safety profile following approval;
- enforcing and defending intellectual property and proprietary rights and claims; and
- achieving desirable medicinal properties for the intended indications.

A change in the outcome of any of these variables with respect to the development of any product candidates we may develop would significantly change the costs, timing, and viability associated with the development of that product candidate. As a result of Allergan's exercise of its option to license the LCA10 Program and our election to enter into a profit-sharing arrangement with Allergan in the United States for such program, our obligations to fund such program in the United States will represent 50% of the total costs related to developing and commercializing the program in the United States.

We do not track research and development costs on a program-by-program basis.

Research and development activities are central to our business model. We expect research and development costs to increase significantly for the foreseeable future as our development programs progress, including as we continue to prepare for the clinical development for the LCA10 Program as well as supporting preclinical studies for our other research programs.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and other related costs, including stock-based compensation for personnel in executive, finance, investor relations, business development, legal, corporate affairs, information technology, facilities and human resource functions. Other significant costs include corporate facility costs not otherwise included in research and development expenses, legal fees related to patent and corporate matters, and fees for accounting and consulting services.

We anticipate that our general and administrative expenses will increase in the future to support continued research and development activities and potential commercialization of any product candidates we identify and develop. These increases will include increased costs related to the hiring of additional personnel and fees to outside consultants. We also anticipate increased expenses related to reimbursement of third-party patent-related expenses and expenses associated with operating as a public company, including costs for audit, legal, regulatory, and tax-related services, director and officer insurance premiums, and investor relations costs. With respect to reimbursement of third-party patent-related expenses specifically, given the ongoing nature of the interference and opposition proceedings involving the patents licensed to us under our license agreement with The Broad Institute, Inc. ("Broad") and the President and Fellows of Harvard College ("Harvard") as described in more detail in Part II, Item 1A "Risk Factors—Risks Related to Our Intellectual Property," we anticipate general and administrative expenses will continue to be significant. Some of our in-licensed patents under our license agreement with Broad and Harvard are subject to priority disputes, and we anticipate that our obligation to reimburse Broad and Harvard for expenses related to these interference and opposition proceedings during future periods will be substantial until such proceedings are resolved.

Other Income (Expense), Net

For the nine months ended September 30, 2018, other income, net consisted primarily of interest income, accretion of discounts associated with marketable securities, and rental income from our former subtenant, partially offset by interest expense on our construction financing lease obligation.

For the nine months ended September 30, 2017, other expense, net consisted primarily of interest expense on our construction financing lease obligation and on certain promissory notes settled in the third quarter of 2017, partially offset by interest income earned on our cash equivalents and marketable securities, rental income from our sublease and accretion of discounts associated with marketable securities.

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 United States generally accepted accounting principles. The preparation of our condensed consolidated financial statements requires us to make judgments and estimates that affect the reported amounts of assets, liabilities, revenues, and expenses, and the disclosure of contingent assets and liabilities in our condensed consolidated financial statements. We base our estimates on historical experience, known trends and events, and various other factors that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions. On an ongoing basis, we evaluate our judgments and estimates in light of changes in circumstances, facts, and experience. The effects of material revisions in estimates, if any, will be reflected in the condensed consolidated financial statements prospectively from the date of change in estimates.

There have been no material changes to our critical accounting policies from those described in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our 2017 10-K other than as noted below.

Revenue Recognition

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* ("ASC 606"), which superseded all existing revenue recognition requirements, including most industry specific guidance. This new standard requires us to recognize revenue when we transfer goods or services to customers in an amount that reflects the consideration that we expect to receive for those goods or services. The update also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. Thereafter a series of clarifying Accounting Standards Updates ("ASU") narrowed the scope improvements and practical expedients where issued. This collective guidance resulted in the new revenue standards under ASC 606. ASC 606 is effective for fiscal years, and interim periods within those years, beginning after December 15, 2017 and should be applied retrospectively to each prior reporting period presented or retrospectively with the cumulative effect of initially applying this update recognized at the date of initial application.

The new revenue standards became effective for us on January 1, 2018, and were adopted using the modified retrospective method. The adoption of ASC 606 resulted in the changes to (i) the allocation of arrangement consideration; including the determination of estimated selling price and the allocation of variable consideration to specific performance obligations for our collaboration agreement with Juno Therapeutics and (ii) the application of proportional performance as a measure of progress on service related deliverables for our strategic alliance with Allergan.

We recognize revenue following the five step model prescribed under ASU No. 2014-09, *Revenue from Contracts with Customers*: (i) identify contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenues when (or as) we satisfy the performance obligation. We evaluate the measure of progress each reporting period and, if necessary, adjust the measure of performance and related revenue recognition. See Note 2 in our notes to condensed consolidated financial statements for more information regarding our adoption of the new revenue recognition rules under ASC 606.

Equity Securities

We record investments in privately issued corporate equity securities that do not have readily determinable fair values at cost and adjust for changes in observable prices minus impairment. Each reporting period we adjust the carrying value of these investments if we observe that additional shares have been issued in an orderly transaction between market participants resulting in a price increase or decrease per share. Additionally, each reporting period we review these investments for impairment considering all available information to conclude whether an impairment exists. Changes in measurement for all corporate equity investments are recognized in "Other income (expense), net."

Results of Operations

Comparison of the Three Months ended September 30, 2018 and 2017

The following table summarizes our results of operations for the three months ended September 30, 2018 and 2017, together with the changes in those items in dollars (in thousands) and the respective percentages of change:

	Three Months Ended September 30,			
	2018	2017	Dollar Change	Percentage Change
Collaboration and other research and development revenues	$ 14,519	$ 6,282	$ 8,237	n/m
Operating expenses:				
Research and development	17,443	20,396	(2,953)	14 %
General and administrative	13,334	12,635	699	6 %
Total operating expenses	30,777	33,031	(2,254)	7 %
Other income, net:				
Other (expense) income, net	(4)	196	(200)	n/m
Interest income (expense), net	1,024	(46)	1,070	n/m
Total other income, net	1,020	150	870	n/m
Net loss	$ (15,238)	$ (26,599)	$ 11,361	43 %

For our results of operations, we have included the respective percentage of changes, unless greater than 100% or less than (100)%, in which case we have denoted such changes as not meaningful (n/m).

Collaboration and other research and development revenues

Collaboration and other research and development revenues increased by $8.2 million, to $14.5 million for the three months ended September 30, 2018 from $6.3 million for three months ended September 30, 2017. This increase was primarily attributable to a $10.6 million increase in revenue recognized pursuant to our strategic alliance with Allergan and $0.1 million in revenue recognized in the third quarter of 2018 pursuant to a license agreement with Beam Therapeutics Inc. (“Beam”), partially offset by a $2.4 million decrease in revenue recognized pursuant to our collaboration agreement with Juno Therapeutics.

Research and development expenses

Research and development expenses decreased by $3.0 million, to $17.4 million for the three months ended September 30, 2018 from $20.4 million for the three months ended September 30, 2017. The following table summarizes

our research and development expenses for the three months ended September 30, 2018 and 2017, together with the changes in those items in dollars (in thousands) and the respective percentages of change:

	Three Months Ended September 30,			
	2018	2017	Dollar Change	Percentage Change
Employee related expenses	$ 5,190	$ 3,868	$ 1,322	34 %
Process and platform development expenses	3,838	4,872	(1,034)	21
Stock-based compensation expenses	3,506	2,431	1,075	44
Sublicensing expenses	2,250	7,198	(4,948)	69
Facility expenses	1,538	1,223	315	26
Other expenses	1,121	804	317	39
Total research and development expenses	$ 17,443	$ 20,396	$ (2,953)	14 %

The decrease in research and development expenses for the three months ended September 30, 2018 compared to the three months ended September 30, 2017 was primarily attributable to:

- approximately $4.9 million in decreased sublicensing expenses resulting primarily from $6.8 million in sublicense fees owed to certain of our licensors in connection with receiving the Allergan Upfront in 2017 and $0.5 million in sublicense fees owed to certain of our licensors in connection with a milestone received under our collaboration with Juno Therapeutics in 2017, partially offset by $2.3 million owed to certain of our licensors in connection with receiving the LCA10 Option Exercise Payment during the third quarter of 2018; and

- approximately $1.0 million in decreased process and platform development expenses, mostly relating to $1.1 million in reimbursable research and development expenses associated with our profit-sharing arrangement with Allergan related to the LCA10 Program.

These decreases were partially offset by approximately $1.3 million in increased employee related expenses due to an increase in the size of our workforce, approximately $1.1 million in increased stock based compensation expense due to an increase in employee and non-employee stock option expense and non-employee restricted stock expense, approximately $0.3 million in increased facility related expenses and approximately $0.3 million in increased other expenses.

General and administrative expenses

General and administrative expenses increased by $0.7 million, to $13.3 million for the three months ended September 30, 2018 from $12.6 million for the three months ended September 30, 2017. The following table summarizes

our general and administrative expenses for the three months ended September 30, 2018 and 2017, together with the changes in those items in dollars (in thousands) and the respective percentages of change:

	Three Months Ended September 30,			
	2018	2017	Dollar Change	Percentage Change
Intellectual property and patent related fees	$ 4,176	$ 6,539	$ (2,363)	36 %
Stock-based compensation expenses	3,193	2,037	1,156	57
Employee related expenses	3,030	1,951	1,079	55
Professional service expenses	1,922	1,248	674	54
Other expenses	1,013	860	153	18
Total general and administrative expenses	$ 13,334	$ 12,635	$ 699	6 %

The increase in general and administrative expenses for the three months ended September 30, 2018 compared to the three months ended September 30, 2017 was primarily attributable to:

- approximately $1.2 million in increased stock-based compensation expenses due to an increase in employee stock option expense;
- approximately $1.1 million in increased employee related expenses due to an increase in the size of our workforce;
- approximately $0.7 million in increased professional service expenses; and
- approximately $0.2 million in increased other expenses.

These increases were partially offset by approximately $2.4 million in decreased intellectual property and patent related fees.

Other income, net

For the three months ended September 30, 2018, other income, net was $1.0 million, which was primarily attributable to interest income and accretion of discounts associated with marketable securities, partially offset by interest expense on our construction financing lease obligation.

For the three months ended September 30, 2017, other income, net was $0.2 million, which was primarily attributable to interest income, accretion of discounts associated with marketable securities, and rental income from our former subtenant, partially offset by interest expense on our construction financing lease obligation and certain promissory notes, which were settled in the third quarter of 2017, and amortization of premiums associated with marketable securities.

Comparison of the Nine Months ended September 30, 2018 and 2017

The following table summarizes our results of operations for the nine months ended September 30, 2018 and 2017, together with the changes in those items in dollars (in thousands) and the respective percentages of change:

	Nine Months Ended September 30,			
	2018	2017	Dollar Change	Percentage Change
Collaboration and other research and development revenues	$ 25,818	$ 10,061	$ 15,757	n/m
Operating expenses:				
Research and development	71,460	56,735	14,725	26 %
General and administrative	41,832	36,817	5,015	14
Total operating expenses	113,292	93,552	19,740	21
Other income (expense), net:				
Other income, net	332	458	(126)	28
Interest income (expense), net	2,243	(1,102)	3,345	n/m
Total other income (expense), net	2,575	(644)	3,219	n/m
Net loss	$ (84,899)	$ (84,135)	$ (764)	1 %

Collaboration and other research and development revenues

Collaboration and other research and development revenues increased by $15.8 million, to $25.8 million for the nine months ended September 30, 2018 from $10.1 million for nine months ended September 30, 2017. This increase was primarily attributable to a $11.0 million increase in revenue recognized pursuant to our strategic alliance with Allergan, $4.0 million in revenue recognized in connection with entering into a license agreement with Beam and a $0.8 million increase in revenue recognized pursuant to our collaboration agreement with Juno Therapeutics.

Research and development expenses

Research and development expenses increased by $14.7 million, to $71.5 million for the nine months ended September 30, 2018 from $56.7 million for the nine months ended September 30, 2017. The following table summarizes our research and development expenses for the nine months ended September 30, 2018 and 2017, together with the changes in those items in dollars (in thousands) and the respective percentages of change:

	Nine Months Ended September 30,			
	2018	2017	Dollar Change	Percentage Change
Process and platform development expenses	$ 20,966	$ 11,723	$ 9,243	79 %
Sublicensing and success payment expenses	16,927	19,531	(2,604)	13
Employee related expenses	14,996	10,888	4,108	38
Stock-based compensation expenses	11,412	9,130	2,282	25
Facility expenses	4,418	3,311	1,107	33
Other expenses	2,741	2,152	589	27
Total research and development expenses	$ 71,460	$ 56,735	$ 14,725	26 %

The increase in research and development expenses for the nine months ended September 30, 2018 compared to the nine months ended September 30, 2017 was primarily attributable to:

- approximately $9.2 million in increased process and platform development expenses due to increased research activity, mostly relating to external research and development expenses, and the acquisition of

certain non-capitalized intangible assets;

- approximately $4.1 million in increased employee related expenses due to an increase in the size of our workforce;
- approximately $2.3 million in increased stock based compensation expense due to an increase in employee and non-employee stock option expense and non-employee restricted stock expense;
- approximately $1.1 million in increased facility related expenses; and
- approximately $0.6 million in increased other expenses due to increased professional service and office expenses.

These increases were partially offset by approximately $2.6 million in decreased sublicensing and success payment expenses resulting primarily from $14.5 million in sublicense fees that were owed to certain of our licensors in connection with receiving the Allergan Upfront and a milestone received under our collaboration with Juno Therapeutics in 2017 and the $5.0 million notes payable that were issued during the first quarter of 2017 to Broad and Wageningen University under one of our licensing agreements, partially offset by the $12.5 million notes payable that were issued to Broad and settled during the second quarter of 2018 in connection with us entering into a sponsored research agreement with Broad and $4.4 million in sublicense fees owed to certain of our licensors in connection with the LCA10 Option Exercise Payment, certain amendment and milestone payments received from Juno Therapeutics under our collaboration and the consideration received from Beam in connection with entering into a license agreement.

General and administrative expenses

General and administrative expenses increased by $5.0 million, to $41.8 million for the nine months ended September 30, 2018 from $36.8 million for the nine months ended September 30, 2017. The following table summarizes our general and administrative expenses for the nine months ended September 30, 2018 and 2017, together with the changes in those items in dollars (in thousands) and the respective percentages of change:

	Nine Months Ended September 30,			
	2018	2017	Dollar Change	Percentage Change
Intellectual property and patent related fees	$ 16,009	$ 17,019	$ (1,010)	6 %
Stock-based compensation expenses	8,839	6,157	2,682	44
Employee related expenses	8,649	6,695	1,954	29
Professional service expenses	5,176	4,428	748	17
Other expenses	3,159	2,518	641	25
Total general and administrative expenses	$ 41,832	$ 36,817	$ 5,015	14 %

The increase in general and administrative expenses for the nine months ended September 30, 2018 compared to the nine months ended September 30, 2017 was primarily attributable to:

- approximately $2.7 million in increased stock-based compensation expenses due to an increase in employee stock option expense;
- approximately $2.0 million in increased employee related expenses due to an increase in the size of our workforce;
- approximately $0.7 million in increased professional service expenses; and
- approximately $0.6 million in increased other expenses including facility-related expenses.

These increases were partially offset by approximately $1.0 million in decreased intellectual property and patent related fees, including expenses associated with the prosecution and maintenance of patents and patent applications.

Other income (expense), net

For the nine months ended September 30, 2018, other income, net was $2.6 million, which was primarily attributable to interest income, accretion of discounts associated with marketable securities, and rental income from our former subtenant, partially offset by interest expense on our construction financing lease obligation.

For the nine months ended September 30, 2017, other expense, net was $0.6 million, which was primarily attributable to interest expense on our construction financing lease obligation and certain promissory notes settled by us in the third quarter of 2017 and amortization of premiums associated with marketable securities, partially offset by rental income from our former subtenant, interest income, and accretion of discounts associated with marketable securities.

Liquidity and Capital Resources

Sources of Liquidity

From inception through September 30, 2018, we funded our operations primarily through proceeds from private placements of our preferred stock of $163.3 million, net proceeds of $299.9 million from our public offerings of our common stock, the Allergan Upfront and the LCA10 Option Exercise Payment, and an up-front payment, research and development payments, milestone payments and amendment payments under our collaboration with Juno Therapeutics of $25.0 million, $9.5 million, $10.0 million and $5.0 million, respectively. As of September 30, 2018, we had cash, cash equivalents and marketable securities of $337.5 million.

In addition to our existing cash, cash equivalents and marketable securities we are eligible to earn milestone payments and are entitled to cost reimbursement under our collaboration agreement with Juno Therapeutics. Additionally, under our strategic alliance with Allergan, we are eligible to earn milestone payments, certain cost reimbursement for the LCA10 Program and certain option exercise or extension payments. Our ability to earn the milestone payments and the timing of earning these amounts are dependent upon the timing and outcome of our development, regulatory and commercial activities and, as such, are uncertain at this time. As of September 30, 2018, our right to contingent payments under our collaboration agreement with Juno Therapeutics and our strategic alliance with Allergan are our only significant committed potential external sources of funds.

At-the-Market Offering

In March 2017, we entered into a sales agreement with Cowen and Company LLC (“Cowen”), under which we were able from time to time to issue and sell shares of our common stock through Cowen in at-the-market offerings for aggregate gross sales proceeds of $50.0 million. In January 2018, we sold 1,429,205 shares of our common stock to Cowen at a weighted-average price of $34.99 per share for gross proceeds of $50.0 million. We paid a 3% cash commission on the gross sales price per share of common stock sold resulting in our receiving net proceeds from the offering of approximately $48.5 million. Following these sales, no shares of common stock remained available for sale under the sales agreement. Shares sold pursuant to the sales agreement were sold pursuant to a shelf registration statement, which became effective on March 15, 2017. In March 2018, we entered into a sales agreement with Cowen, under which we are able from time to time to issue and sell shares of our common stock pursuant to a shelf registration statement through Cowen in at-the-market offerings for aggregate gross sales proceeds of $150.0 million. To date, we have not sold any of our shares of common stock to Cowen under this agreement.

Indebtedness

Under the terms of certain of our license agreements and a sponsored research agreement, we may be required to issue additional promissory notes in connection with the achievement of success payment criteria. See Notes 7 and 8 to our condensed consolidated financial statements for more information regarding these obligations.

Cash Flows

The following table provides information regarding our cash flows for the nine months ended September 30, 2018 and 2017 (in thousands):

	Nine Months Ended September 30,	
	2018	2017
Net cash provided by (used in):		
Operating activities	$ (47,034)	$ 15,652
Investing activities	(44,483)	(210,488)
Financing activities	56,588	96,055
Net decrease in cash and cash equivalents	$ (34,929)	$ (98,781)

Net Cash (Used in) Provided by Operating Activities

The use of cash in all periods resulted primarily from our net losses adjusted for non-cash charges and changes in components of working capital.

Net cash used in operating activities was approximately $47.0 million for the nine months ended September 30, 2018, and consisted primarily of a net loss of $84.9 million adjusted for non-cash items, including stock-based compensation expenses of $20.3 million, non-cash research and development expenses of $14.4 million, non-cash investment in equity securities of $3.7 million, depreciation expense of $2.4 million, other non-cash items income of $2.1 million, and a net change in operating assets and liabilities of $6.6 million. The change in operating assets and liabilities was related to an increase in deferred revenue of $4.4 million, an increase in accrued expenses of $2.3 million, an increase in accounts payable of $1.7 million and a decrease in accounts receivable of $0.6 million, partially offset by an increase in prepaid expenses and other current assets of $2.3 million and an increase in other non-current assets of $0.1 million.

Net cash provided by operating activities was approximately $15.7 million for the nine months ended September 30, 2017, and consisted primarily of a net loss of $84.1 million adjusted for non-cash items including stock-based compensation expenses of $15.3 million, non-cash research and development expenses of $5.0 million, depreciation expense of $2.0 million, other non-cash items expense of $0.1 million, and a net change in operating assets and liabilities of $77.6 million. The change in operating assets and liabilities was related to an increase in deferred revenue of $84.8 million, primarily related to receiving the Allergan Upfront, and an increase of $2.6 million in accounts payable, partially offset by a decrease of $9.0 million in accrued expenses, an increase of $0.6 million in accounts receivable, and an increase of $0.3 million in prepaid expenses and other current assets.

Net Cash Used in Investing Activities

Net cash used in investing activities was approximately $44.5 million for the nine months ended September 30, 2018 and consisted primarily of costs to acquire marketable securities of $351.2 million and costs to acquire property plant and equipment of $3.3 million, partially offset by proceeds from maturities of marketable securities of $310.0 million.

Net cash used in investing activities was approximately $210.5 million for the nine months ended September 30, 2017 and consisted of costs to purchase marketable securities of $298.2 million and costs to acquire capital equipment of $1.8 million, partially offset by the proceeds from maturities of marketable securities of $89.5 million.

Net Cash Provided by Financing Activities

Net cash provided by financing activities was approximately $56.6 million for the nine months ended September 30, 2018, primarily related to $48.5 million in proceeds received from public offerings of common stock, $8.4 million in proceeds from exercises of options for our common stock, and $0.4 million from issuances of our

common stock under an employee stock purchase plan, partially offset by payments on the construction financing obligation of $0.6 million.

Net cash provided by financing activities was approximately $96.1 million for the nine months ended September 30, 2017 primarily related to $96.7 million in proceeds received from our public stock offering in March 2017, net of issuance costs that were paid as of September 30, 2017, and $0.5 million in proceeds from exercises of options for our common stock, partially offset by $0.6 million in payments of notes payable and $0.6 million in payments made on the construction financing lease obligation.

Funding Requirements

We expect our expenses to increase in connection with our ongoing activities, particularly as we further advance our current research programs and our preclinical development activities; prepare for clinical development of our most advanced program; seek to identify product candidates and additional research programs; initiate preclinical testing and clinical trials for any product candidates we identify and develop; maintain, expand, and protect our intellectual property portfolio, including reimbursing our licensors for expenses related to the intellectual property that we in-license from such licensors; hire additional clinical, quality control, and scientific personnel; and incur additional costs associated with operating as a public company. In addition, if we obtain marketing approval for any product candidate that we identify and develop, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing, and distribution to the extent that such sales, marketing, and distribution are not the responsibility of a collaborator. We do not expect to generate significant recurring revenue unless and until we obtain regulatory approval for and commercialize a product candidate. Furthermore, since 2016 we have incurred, and in future years we expect to continue to incur, significant costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce, or eliminate our research and development programs or future commercialization efforts.

We expect that our existing cash, cash equivalents, and marketable securities at September 30, 2018, anticipated interest income, and anticipated research support under our collaboration agreement with Juno Therapeutics will enable us to fund our operating expenses and capital expenditure requirements for at least the next 24 months following the date of this Quarterly Report on Form 10-Q. We have based our estimates on assumptions that may prove to be wrong, and we may use our available capital resources sooner than we currently expect. Our future capital requirements will depend on many factors, including:

- the scope, progress, results, and costs of drug discovery, preclinical development, laboratory testing, and clinical trials for the product candidates we may develop;
- the costs of preparing, filing, and prosecuting patent applications, maintaining and enforcing our intellectual property and proprietary rights, and defending intellectual property-related claims;
- the costs, timing, and outcome of regulatory review of the product candidates we may develop;
- the costs of future activities, including product sales, medical affairs, marketing, manufacturing, and distribution, for any product candidates for which we receive regulatory approval;
- the success of our collaboration with Juno Therapeutics and our strategic alliance with Allergan;
- whether Juno Therapeutics exercises either or both of its options to extend the research program term under our collaboration (each of which would trigger an extension payment to us);
- whether Allergan exercises any additional options under our strategic alliance;
- our ability to establish and maintain additional collaborations on favorable terms, if at all;

- the extent to which we acquire or in-license other medicines and technologies;
- the costs of reimbursing our licensors for the prosecution and maintenance of the patent rights in-licensed by us; and
- the costs of operating as a public company.

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

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances, and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, our stockholders' ownership interests will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our stockholders. Debt financing, if available, 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 raise funds through additional collaborations, strategic alliances, or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs, or product candidates or to 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 our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Contractual Obligations

During the three months ended September 30, 2018, there were no material changes to our contractual obligations and commitments described under Management's Discussion and Analysis of Financial Condition and Results of Operations in our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 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.

Effects of Inflation

Inflation would generally affect us by increasing our cost of labor and clinical trial costs. We do not believe that inflation had a material effect on our business, financial condition or results of operations during the nine months ended September 30, 2018 and 2017.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risk related to changes in interest rates. As of September 30, 2018, we had cash and cash equivalents of $111.7 million, primarily held in money market mutual funds consisting of U.S. government-backed securities, and marketable securities of $225.8 million, primarily consisting of U.S. government-backed securities. Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S.

interest rates, particularly because our investments, including cash equivalents, are in the form, or may be in the form of, money market funds or marketable securities and are or may be invested in U.S. Treasury and U.S. government agency obligations. Due to the short-term maturities and low risk profiles of our investments, an immediate 100 basis point change in interest rates would not have a material effect on the fair market value of our investments.

While we contract with certain vendors and institutions internationally, substantially all of our total liabilities as of September 30, 2018 were denominated in the United States dollar and we believe that we do not have any material exposure to foreign currency exchange rate risk.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2018. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934 (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 SEC'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 September 30, 2018, our Chief Executive Officer and Chief 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

We regularly review our system of internal control over financial reporting to ensure we maintain an effective internal control environment. We continue to create new processes and controls as well as improve our existing environment to increase efficiencies. Improvements may include such activities as implementing new, more efficient systems, and consolidating activities. There were no changes in our internal control over financial reporting that occurred during the period covered by this Quarterly Report on Form 10-Q that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we may become involved in litigation or other legal proceedings relating to claims arising from the ordinary course of business. There can be no assurance that any proceedings that result from these third-party actions will be resolved in our favor. In addition, if they are not resolved in our favor, there can be no assurance that the result will not have a material adverse effect on our business, financial condition, results of operations, or prospects. For additional information regarding these matters set forth in this section, see "Risk Factors—Risks Related to Our Intellectual Property—Some of our in-licensed patents are subject to priority disputes". Regardless of outcome, litigation or other legal proceedings can have an adverse impact on us because of defense and settlement costs, diversion of management resources, and other factors.

On January 11, 2016 and March 17, 2016, the Patent Trial and Appeal Board (the "PTAB") of the United States Patent and Trademark Office ("USPTO") declared an interference between a pending U.S. patent application (U.S. Serial No. 13/842,859) that is owned by the University of California, the University of Vienna, and Emmanuelle Charpentier and 12 U.S. patents (U.S. Patent Nos. 8,697,359; 8,771,945; 8,795,965; 8,865,406; 8,871,445; 8,889,356; 8,895,308; 8,906,616; 8,932,814; 8,945,839; 8,993,233; and 8,999,641) and a pending U.S. patent application (U.S. Serial No. 14/704,551) that are co-owned by The Broad Institute, Inc. ("Broad"), Massachusetts Institute of Technology ("MIT"), and in some cases the President and Fellows of Harvard College ("Harvard"), and in-licensed by us. An interference is a proceeding within the USPTO to determine priority of invention of the subject matter of patent claims filed by different parties. In the declared interference, the University of California, acting on behalf of itself and the University of Vienna, and Emmanuelle Charpentier were designated as the senior party and Broad was designated as the junior party.

On February 15, 2017, the PTAB held that there is no interference-in-fact, which means that no interference is needed to resolve priority between the parties because the PTAB determined that the Broad claims are directed to subject matter that is patentably distinct from those of the University of California, the University of Vienna, and Emmanuelle Charpentier. The interference proceeding has therefore ended. Therefore, the 12 U.S. patents and one U.S. patent application that we have in-licensed from Broad, acting on behalf of itself, MIT, and Harvard, as well as the U.S. patent application owned by the University of California, the University of Vienna, and Emmanuelle Charpentier, with respect to which the PTAB had declared an interference were not modified or revoked as a result of this interference proceeding.

On April 12, 2017, the University of California, the University of Vienna, and Emmanuelle Charpentier appealed to the U.S. Court of Appeals for the Federal Circuit (the "CAFC") for review of the no interference-in-fact holding made by the PTAB in the interference proceeding. On September 10, 2018, the Court of Appeals for the Federal Circuit affirmed the PTAB's holding of no interference-in-fact. The University of California, the University of Vienna, and Emmanuelle Charpentier have until December 9, 2018 to file a Petition for Writ of Certiorari with the U.S. Supreme Court if they want to seek review of this decision from the Court of Appeals for the Federal Circuit.

On May 9, 2016, the USPTO granted a request for ex parte re-examination of U.S. Patent No. 8,771,945, which is among the 12 U.S. patents with respect to which the PTAB had declared an interference and which we have in-licensed from Broad, acting on behalf of itself and MIT. On May 12, 2016, the PTAB suspended the re-examination of U.S. Patent No. 8,771,945 noting that it has jurisdiction over any file that involves a patent involved in the interference. It is uncertain when the PTAB will lift the suspension, however the PTAB may do so in light of the CAFC's affirmance of the PTAB's no interference-in-fact holding.

On January 17, 2018, the European Patent Office Opposition Division (the "Opposition Division") revoked in the European Patent Office ("EPO") a European patent that we have in-licensed from Broad, acting on behalf of itself, MIT and Harvard (European Patent No. EP 2,771,468 B1). On January 18, 2018, Broad, acting on behalf of itself, MIT and Harvard filed a notice of appeal to the Boards of Appeal of the EPO for review of the Opposition Division's decision to revoke this patent. It is uncertain when or in what manner the Boards of Appeal will act on this appeal. The Opposition Division has also initiated opposition proceedings in the EPO against seven other European patents that we have in-licensed from Broad, acting on behalf of itself, MIT and Harvard, one European patent that we have in-licensed

from Broad, acting on behalf of itself and MIT and two European patents that we have in-licensed from Broad, acting on behalf of itself, MIT, Harvard and The Rockefeller University. In addition, a notice of opposition has been filed against one other European patent that we co-own and have in-licensed from Broad, acting on behalf of itself, MIT and The University of Iowa Research Foundation.

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 (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 Our Financial Position and Need for Additional Capital

We have incurred significant losses since inception. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability.

Since inception, we have incurred significant operating losses. Our net losses were $120.3 million, $97.2 million, and $72.9 million for the years ended December 31, 2017, 2016 and 2015, respectively. As of September 30, 2018, we had an accumulated deficit of $391.2 million. We have financed our operations primarily through public offerings of our common stock, private placements of our preferred stock, our collaboration with Juno Therapeutics, Inc., a Celgene company that is a wholly-owned subsidiary of Celgene Corporation ("Juno Therapeutics"), and payments under our strategic alliance with Allergan Pharmaceuticals International Limited ("Allergan"). We have devoted all of our efforts to research and development. We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. The net losses we incur may fluctuate significantly from quarter to quarter. We anticipate that our expenses will increase substantially if and as we:

- continue our current research programs and our preclinical development of product candidates from our current research programs;
- seek to identify additional research programs and additional product candidates;
- initiate preclinical testing and clinical trials for any product candidates we identify and develop;
- prepare for clinical development of our most advanced program;
- maintain, expand, and protect our intellectual property portfolio and provide reimbursement of third-party expenses related to our patent portfolio;
- seek marketing approvals for any of our product candidates that successfully complete clinical trials;
- ultimately establish a sales, marketing, and distribution infrastructure to commercialize any medicines for which we may obtain marketing approval;
- further develop our genome editing platform;
- hire additional clinical, quality control, and scientific personnel;
- add operational, financial, and management information systems and personnel, including personnel to support our product development;

- acquire or in-license other medicines and technologies;
- validate a commercial-scale current Good Manufacturing Practices ("cGMP") manufacturing facility; and
- continue to operate as a public company.

We have not initiated clinical development of any product candidate and expect that it will be many years, if ever, before we have a product candidate ready for commercialization. To become and remain profitable, we must develop and eventually commercialize a medicine or medicines with significant market potential. This will require us to be successful in a range of challenging activities, including identifying product candidates, completing preclinical testing and clinical trials of product candidates, obtaining marketing approval for these product candidates, manufacturing, marketing, and selling those medicines for which we may obtain marketing approval, and satisfying any post-marketing requirements. We may never succeed in these activities and, even if we do, may never generate revenues that are significant or large enough to achieve profitability. We are currently only in the preclinical testing stages for our most advanced research programs. If we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease the value of our company and could impair our ability to raise capital, maintain our research and development efforts, expand our business, or continue our operations. A decline in the value of our company could cause our stockholders to lose all or part of their investments in us.

We will need substantial additional funding. If we are unable to raise capital when needed, we would be forced to delay, reduce, or eliminate our research and product development programs or commercialization efforts.

We expect our expenses to increase in connection with our ongoing activities, particularly as we identify, continue the research and development of, initiate clinical trials of, and seek marketing approval for, product candidates. In addition, if we obtain marketing approval for any product candidates we may develop, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing, and distribution to the extent that such sales, marketing, manufacturing, and distribution are not the responsibility of a collaborator. In 2016 and 2017 we incurred, and in future years we expect to continue to incur, significant costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce, or eliminate our research and product development programs or future commercialization efforts.

We expect that our existing cash, cash equivalents, and marketable securities at September 30, 2018, anticipated interest income, and anticipated research support under our collaboration agreement with Juno Therapeutics, will enable us to fund our operating expenses and capital expenditure requirements for at least the next 24 months following the date of this Quarterly Report on Form 10-Q. Our future capital requirements will depend on many factors, including:

- the scope, progress, results, and costs of drug discovery, preclinical development, laboratory testing, and clinical or natural history study trials for the product candidates we may develop;
- the costs of preparing for the clinical development of our most advanced program;
- the costs of preparing, filing, and prosecuting patent applications, maintaining and enforcing our intellectual property and proprietary rights, and defending intellectual property-related claims;
- the costs, timing, and outcome of regulatory review of the product candidates we may develop;
- the costs of future activities, including product sales, medical affairs, marketing, manufacturing, and distribution, for any product candidates for which we receive regulatory approval;
- the success of our collaboration with Juno Therapeutics and our strategic alliance with Allergan;

- whether Juno Therapeutics exercises either or both of its options to extend the research program term under our collaboration (each of which would trigger an extension payment to us);
- whether Allergan exercises any additional options under our strategic alliance;
- our ability to establish and maintain additional collaborations on favorable terms, if at all;
- the extent to which we acquire or in-license other medicines and technologies;
- the costs of reimbursing our licensors for the prosecution and maintenance of the patent rights in-licensed by us; and
- the costs of operating as a public company.

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

Raising additional capital may cause dilution to our stockholders, restrict our operations or require us to relinquish rights to our technologies or 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 public or private equity offerings, debt financings, collaborations, strategic alliances, and licensing arrangements. We do not have any significant committed external source of funds, other than our right to payments under our collaboration agreement with Juno Therapeutics, which is limited in scope and duration. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our stockholders may be materially diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our stockholders. Debt financing, if available, 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 raise funds through additional collaborations, strategic alliances, or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs, or product candidates, or we may have to 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 our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Our short operating history may make it difficult for our stockholders to evaluate the success of our business to date and to assess our future viability.

We are an early-stage company. We were founded and commenced operations in the second half of 2013. Our operations to date have been limited to organizing and staffing our company, business planning, raising capital, acquiring and developing our technology, identifying potential product candidates, and undertaking preclinical studies. All of our research programs are still in the preclinical or research stage of development, and their risk of failure is high. We have not yet demonstrated an ability to initiate or successfully complete any clinical trials, including large-scale, pivotal clinical trials, obtain marketing approvals, manufacture a commercial-scale medicine, or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful commercialization. Typically, it takes about 10 to 15 years to develop a new medicine from the time it is discovered to when it is available for treating

patients. Consequently, any predictions about our future success or viability may not be as accurate as they could be if we had a longer operating history.

In addition, as a new business, we may encounter unforeseen expenses, difficulties, complications, delays, and other known and unknown factors. We will need to transition from a company with a research focus to a company capable of supporting commercial activities. We may not be successful in such a transition.

We expect that our financial condition and operating results will continue to fluctuate significantly from quarter-to-quarter and year-to-year due to a variety of factors, many of which are beyond our control. Accordingly, our stockholders should not rely upon the results of any quarterly or annual periods as indications of future operating performance.

We have never generated revenue from product sales and may never be profitable.

Our ability to generate revenue from product sales and achieve profitability depends on our ability, alone or with collaborative partners, to successfully complete the development of, and obtain the regulatory approvals necessary to commercialize, product candidates we may identify for development. We do not anticipate generating revenues from product sales for the next several years, if ever. Our ability to generate future revenues from product sales depends heavily on our, or our collaborators', ability to successfully:

- identify product candidates and complete research and preclinical and clinical development of any product candidates we may identify;
- seek and obtain regulatory and marketing approvals for any of our product candidates for which we complete clinical trials;
- launch and commercialize any of our product candidates for which we obtain regulatory and marketing approval by establishing a sales force, marketing, and distribution infrastructure or, alternatively, collaborating with a commercialization partner;
- qualify for adequate coverage and reimbursement by government and third-party payors for any our product candidates for which we obtain regulatory and marketing approval;
- develop, maintain, and enhance a sustainable, scalable, reproducible, and transferable manufacturing process for the product candidates we may develop;
- establish and maintain supply and manufacturing relationships with third parties that can provide adequate, in both amount and quality, products and services to support clinical development and the market demand for any of our product candidates for which we obtain regulatory and marketing approval;
- obtain market acceptance of any product candidates we may develop as viable treatment options;
- address competing technological and market developments;
- implement internal systems and infrastructure, as needed;
- negotiate favorable terms in any collaboration, licensing, or other arrangements into which we may enter and performing our obligations in such arrangements;
- maintain, protect, and expand our portfolio of intellectual property rights, including patents, trade secrets, and know-how;
- avoid and defend against third-party interference or infringement claims; and

- attract, hire, and retain qualified personnel.

Even if one or more of the product candidates we may develop is approved for commercial sale, we anticipate incurring significant costs associated with commercializing any approved product candidate. Our expenses could increase beyond expectations if we are required by the U.S. Food and Drug Administration (the "FDA"), the European Medicines Agency (the "EMA"), or other regulatory authorities to perform clinical and other studies in addition to those that we currently anticipate. Even if we are able to generate revenues from the sale of any approved products, we may not become profitable and may need to obtain additional funding to continue operations.

Risks Related to Discovery, Development, and Commercialization

We intend to identify and develop product candidates based on a novel genome editing technology, which makes it difficult to predict the time and cost of product candidate development. No therapeutic products that utilize genome editing technology have been approved in the United States or in Europe, and there have only been a limited number of human clinical trials of a genome editing product candidate.

We have concentrated our research and development efforts on our genome editing platform, which uses CRISPR technology. Our future success depends on the successful development of this novel genome editing therapeutic approach. To date, no therapeutic product that utilizes genome editing, including CRISPR technology, has been approved in the United States or Europe and there have been only a limited number of clinical trials involving the use of a therapeutic utilizing genome editing technologies. For example, we are aware of a limited number of groups initiating clinical trials using CRISPR technology. Because we have not initiated a clinical trial for any program and most of our programs are all in the research or preclinical stage, we have not yet been able to assess safety in humans, and there may be long-term effects from treatment with any of our future product candidates that we cannot predict at this time. Any product candidates we may develop will act at the level of DNA, and, because animal DNA differs from human DNA, it will be difficult for us to test our future product candidates in animal models for either safety or efficacy. Also, animal models do not exist for some of the diseases we expect to pursue in our programs. As a result of these factors, it is more difficult for us to predict the time and cost of product candidate development, and we cannot predict whether the application of our genome editing platform, or any similar or competitive genome editing platforms, will result in the identification, development, and regulatory approval of any medicines. There can be no assurance that any development problems we experience in the future related to our genome editing platform or any of our research programs will not cause significant delays or unanticipated costs, or that such development problems can be solved. We may also experience delays in developing a sustainable, reproducible, and scalable manufacturing process or transferring that process to commercial partners. Any of these factors may prevent us from completing our preclinical studies or any clinical trials that we may initiate or commercializing any product candidates we may develop on a timely or profitable basis, if at all.

Because genome editing is novel and the regulatory landscape that will govern any product candidates we may develop is uncertain and may change, we cannot predict the time and cost of obtaining regulatory approval, if we receive it at all, for any product candidates we may develop.

The regulatory requirements that will govern any novel genome editing product candidates we develop are not entirely clear and may change. Within the broader genomic medicine field, we are aware of a limited number of gene therapy products that have received marketing authorization from the FDA and the European Commission. Even with respect to more established products that fit into the categories of gene therapies or cell therapies, the regulatory landscape is still developing. Regulatory requirements governing gene therapy products and cell therapy products have changed frequently and will likely continue to change in the future. Moreover, there is substantial, and sometimes uncoordinated, overlap in those responsible for regulation of existing gene therapy products and cell therapy products. For example, in the United States, the FDA has established the Office of Tissues and Advanced Therapies within its Center for Biologics Evaluation and Research ("CBER") to consolidate the review of gene therapy and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. Gene therapy clinical trials are also subject to review and oversight by an institutional biosafety committee ("IBC"), a local institutional committee that reviews and oversees basic and clinical research conducted at the institution participating in the clinical trial. Gene therapy clinical trials conducted at institutions that receive funding for recombinant DNA research from the United States National Institutes of Health (the "NIH") are also subject to review by the NIH Office of Biotechnology Activities' Recombinant DNA Advisory Committee. Although the FDA decides whether individual gene therapy protocols may proceed, the review process and determinations of other reviewing bodies can impede or delay the initiation of a clinical trial, even if the FDA has reviewed the trial and approved its initiation. The same applies in the European Union. The EMA's Committee for Advanced Therapies ("CAT") is responsible for assessing the quality, safety, and efficacy of advanced-therapy medicinal products. The role of the CAT is to prepare a draft opinion on an application for marketing authorization for a gene therapy medicinal candidate that is submitted to the EMA. In the European Union, the development and evaluation of a gene therapy medicinal product must be considered in the context of the relevant European Union guidelines. The EMA may issue new guidelines concerning the development and marketing authorization for gene therapy medicinal products and require that we comply with these new guidelines. As a result, the procedures and standards applied to gene therapy products and cell therapy products may be applied to any CRISPR product candidates we may develop, but that remains uncertain at this point.

Adverse developments in clinical trials conducted by others of gene therapy products, cell therapy products, or products developed through the application of a CRISPR or other genome editing technology may cause the FDA, the EMA, and other regulatory bodies to revise the requirements for approval of any product candidates we may develop or limit the use of products utilizing genome editing technologies, either of which could materially harm our business. In addition, the clinical trial requirements of the FDA, the EMA, and other regulatory authorities and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty, and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known, or more extensively studied pharmaceutical or other product candidates. Regulatory agencies administering existing or future regulations or legislation may not allow production and marketing of products utilizing genome editing technology in a timely manner or under technically or commercially feasible conditions. In addition, regulatory action or private litigation could result in expenses, delays, or other impediments to our research programs or the commercialization of resulting products.

The regulatory review committees and advisory groups described above and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies or trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of these treatment candidates, or lead to significant post-approval limitations or restrictions. As we advance our research programs and develop future product candidates, we will be required to consult with these regulatory and advisory groups and to comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of any product candidates we identify and develop.

Adverse public perception of genomic medicines, and genome editing in particular, may negatively impact regulatory approval of, or demand for, our potential products.

Our potential therapeutic products involve editing the human genome. The clinical and commercial success of our potential products will depend in part on public acceptance of the use of genome editing therapy for the prevention or treatment of human diseases. Public attitudes may be influenced by claims that genome editing is unsafe, unethical, or immoral, and, consequently, our products may not gain the acceptance of the public or the medical community. Adverse public attitudes may adversely impact our ability to enroll clinical trials. Moreover, our success will depend upon physicians prescribing, and their patients being willing to receive, treatments that involve the use of product candidates we may develop in lieu of, or in addition to, existing treatments with which they are already familiar and for which greater clinical data may be available.

In addition, genome editing technology is subject to public debate and heightened regulatory scrutiny due to ethical concerns relating to the application of genome editing technology to human embryos or the human germline. For example, in April 2015, Chinese scientists reported on their attempts to edit the genome of human embryos to modify the gene for hemoglobin beta. This is the gene in which a mutation occurs in patients with the inherited blood disorder beta thalassemia. Although this research was purposefully conducted in embryos that were not viable, the work prompted calls for a moratorium or other types of restrictions on genome editing of human eggs, sperm, and embryos. The Alliance for Regenerative Medicine in Washington has called for a voluntary moratorium on the use of genome editing technologies, including CRISPR/Cas9, in research that involved altering human embryos or human germline cells. Similarly, the NIH has announced that it would not fund any use of genome editing technologies in human embryos, noting that there are multiple existing legislative and regulatory prohibitions against such work, including the Dickey-Wicker Amendment, which prohibits the use of appropriated funds for the creation of human embryos for research purposes or for research in which human embryos are destroyed. While the National Academy of Sciences released a report in February 2017 suggesting that it may be advisable to permit clinical trials for germline genome editing if undertaken for compelling reasons and under strict oversight, it maintained that any such research should only proceed with broad public input. Laws in the United Kingdom prohibit genetically modified embryos from being implanted into women, but embryos can be altered in research labs under license from the Human Fertilisation and Embryology Authority. Research on embryos is more tightly controlled in many other European countries. Notwithstanding, we are aware of certain groups conducting research in human embryo genome editing.

Moreover, in an annual worldwide threat assessment report delivered to the U.S. Congress in February 2016, the U.S. Director of National Intelligence stated that research into genome editing probably increases the risk of the creation of potentially harmful biological agents or products, including weapons of mass destruction. He noted that the broad distribution, low cost, and accelerated pace of development of genome editing technology could result in the deliberate or unintentional misuse of such technology.

Although we do not use our technologies to edit human embryos or the human germline, such public debate about the use of genome editing technologies in human embryos and heightened regulatory scrutiny could prevent or delay our development of product candidates. More restrictive government regulations or negative public opinion would have a negative effect on our business or financial condition and may delay or impair our development and commercialization of product candidates or demand for any products we may develop. Adverse events in our preclinical studies or clinical trials or those of our competitors or of academic researchers utilizing genome editing technologies, even if not ultimately attributable to product candidates we may identify and develop, and the resulting publicity could result in increased governmental regulation, unfavorable public perception, potential regulatory delays in the testing or approval of potential product candidates we may identify and develop, stricter labeling requirements for those product candidates that are approved, and a decrease in demand for any such product candidates. Use of genome editing technology by a third party or government to develop biological agents or products that threaten the United States' national security could similarly result in such negative impacts to us.

We may not be successful in our efforts to identify, develop, or commercialize potential product candidates.

The success of our business depends primarily upon our ability to identify, develop, and commercialize products based on our genome editing platform. All of our product development programs are still in the preclinical or

research stage of development. Our research programs, including those subject to our collaboration with Juno Therapeutics and our strategic alliance with Allergan, may fail to identify potential product candidates for clinical development for a number of reasons. Our research methodology may be unsuccessful in identifying potential product candidates, or our potential product candidates may be shown to have harmful side effects or may have other characteristics that may make the products impractical to manufacture, unmarketable, or unlikely to receive marketing approval.

If any of these events occur, we may be forced to abandon our development efforts for a program or programs, which would have a material adverse effect on our business, financial condition, results of operations, and prospects. Research programs to identify new product candidates require substantial technical, financial, and human resources. We may focus our efforts and resources on potential programs or product candidates that ultimately prove to be unsuccessful.

The genome editing field is relatively new and is evolving rapidly. We are focusing our research and development efforts on CRISPR gene editing technology using Cas9 and Cpf1 enzymes, but other genome editing technologies may be discovered that provide significant advantages over CRISPR/Cas9 or CRISPR/Cpf1, which could materially harm our business.

To date, we have focused our efforts on genome editing technologies using CRISPR and the Cas9 and Cpf1 enzymes. Other companies have previously undertaken research and development of genome editing technologies using zinc finger nucleases, engineered meganucleases, and transcription activator-like effector nucleases, but to date none has obtained marketing approval for a product candidate. There can be no certainty that the CRISPR/Cas9 or CRISPR/Cpf1 technology will lead to the development of genomic medicines, that other genome editing technologies will not be considered better or more attractive for the development of medicines or that either Cas9 or Cpf1, the two CRISPR associated proteins that we use, may be useful or successful in developing therapeutics. For example, Cas9 or Cpf1 may be determined to be less attractive than other CRISPR enzymes, including CRISPR enzymes that have yet to be discovered. Similarly, a new genome editing technology that has not been discovered yet may be determined to be more attractive than CRISPR. Moreover, if we decide to develop genome technologies other than CRISPR technology using a Cas9 or Cpf1 enzyme, we cannot be certain we will be able to obtain rights to such technologies. Although all of our founders who currently provide consulting and advisory services to us in the area of certain genome editing technologies have assignment of inventions obligations to us with respect to the services they perform for us, these assignment of inventions obligations are subject to limitations and do not extend to their work in other fields or to the intellectual property arising from their employment with their respective academic and research institutions. To obtain intellectual property rights assigned by these founders to such institutions, we would need to enter into license agreements with such institutions. Any of these factors could reduce or eliminate our commercial opportunity, and could have a material adverse effect on our business, financial condition, results of operations, and prospects.

We depend heavily on the success of our most advanced program. All of our product development programs are at the preclinical or research stage. Preclinical testing and clinical trials of product candidates may not be successful. If we are unable to commercialize any product candidates we may develop or experience significant delays in doing so, our business will be materially harmed.

We have invested a significant portion of our efforts and financial resources in the identification of our most advanced product development program for the treatment of Leber Congenital Amaurosis type 10 (“LCA10”). 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 a product candidate for the treatment of LCA10 and other product candidates that we may identify in the future. The success of product candidates we may identify and develop will depend on many factors, including the following:

- sufficiency of our financial and other resources to complete the necessary preclinical studies and clinical trials for our most advanced program;
- successful completion of preclinical studies and investigational new drug (“IND”)-enabling studies;

- successful enrollment in, and completion of, clinical trials;
- receipt of marketing approvals from applicable regulatory authorities;
- establishing commercial manufacturing capabilities or making arrangements with third-party manufacturers;
- obtaining and maintaining patent and trade secret protection and non-patent exclusivity for our medicines;
- launching commercial sales of the medicines, if and when approved, whether alone or in collaboration with others;
- acceptance of the medicines, if and when approved, by patients, the medical community, and third-party payors;
- effectively competing with other therapies and treatment options;
- a continued acceptable safety profile of the medicines following approval;
- enforcing and defending intellectual property and proprietary rights and claims; and
- achieving desirable medicinal properties for the intended indications.

The foregoing also applies to our collaborators to the extent we have partnered, sold or licensed any of our research programs to them. For instance, Allergan has exercised its option to license the LCA10 program and, although we have elected to enter into a profit-sharing arrangement to equally split the profits and costs of such program in the United States and we will continue to work with Allergan on the development and commercialization of such program, in the event a dispute arises, Allergan will have final decision making authority with respect to the LCA10 program. If we or our collaborators 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 any product candidates we may develop, which would materially harm our business.

Of the large number of biologics and drugs in development in the pharmaceutical industry, only a small percentage result in the submission of a Biologics License Application (a "BLA") to the FDA or a marketing authorization application (an "MAA") to the EMA. Not all BLAs or MAAs that are submitted to a regulatory agency are approved for commercialization. Furthermore, even if we do receive regulatory approval to market any product candidates that we may identify and develop, any such approval may be subject to limitations on the indicated uses for which we may market the product. Accordingly, even if we are able to obtain the requisite financing to continue to fund our research programs, we cannot assure you that we or our collaborators will successfully develop or commercialize our most advanced program, or any of our other research programs. If we or any of our collaborators and future development partners are unable to develop, or obtain regulatory approval for, or, if approved, successfully commercialize, any product candidates we may identify and develop, we may not be able to generate sufficient revenue to continue our business.

If serious adverse events, undesirable side effects, or unexpected characteristics are identified during the development of any product candidates we may develop, we may need to abandon or limit our further clinical development of those product candidates.

We have not evaluated any product candidates in human clinical trials, and our proposed delivery modes, combined with CRISPR technology, have a limited history, if any, of being tested clinically. It is impossible to predict when or if any product candidates we may develop will prove safe in humans. In the genomic medicine field, there have been several significant adverse events from gene therapy treatments in the past, including reported cases of leukemia and death. There can be no assurance that genome editing technologies will not cause undesirable side effects.

A significant risk in any genome editing product is that the edit will be "off-target" and cause serious adverse events, undesirable side effects, or unexpected characteristics. For example, off-target cuts could lead to disruption of a gene or a genetic regulatory sequence at an unintended site in the DNA, or, in those instances where we also provide a segment of DNA to serve as a repair template, it is possible that following off-target cut events, DNA from such repair template could be integrated into the genome at an unintended site, potentially disrupting another important gene or genomic element. We cannot be certain that off-target editing will not occur in any of our planned or future clinical studies. There is also the potential risk of delayed adverse events following exposure to genome editing therapy due to the potential for persistent biological activity of the genetic material or other components of products used to carry the genetic material.

If any product candidates we develop are associated with serious adverse events, or undesirable side effects, or have characteristics that are unexpected, we may need to abandon their development or limit development to certain uses or subpopulations in which the serious adverse events, undesirable side effects or other characteristics are less prevalent, less severe, or more acceptable from a risk-benefit perspective, any of which would have a material adverse effect on our business, financial condition, results of operations, and prospects. Many product candidates that initially showed promise in early stage testing for treating cancer or other diseases have later been found to cause side effects that prevented further clinical development of the product candidates.

If any of the product candidates we may develop or the delivery modes we rely on cause undesirable side effects, it could delay or prevent their regulatory approval, limit the commercial potential, or result in significant negative consequences following any potential marketing approval.

Product candidates we may develop may be associated with off-target editing or other serious adverse events, undesirable side effects, or unexpected characteristics. There also is the potential risk of delayed adverse events following exposure to gene editing therapy due to persistent biologic activity of the genetic material or other components of products used to carry the genetic material. In addition to serious adverse events or side effects caused by any product candidate we may develop, the administration process or related procedures also can cause undesirable side effects. If any such events occur, our clinical trials could be suspended or terminated.

If in the future we are unable to demonstrate that such adverse events were caused by factors other than our product candidate, the FDA, the European Commission, the EMA or other regulatory authorities could order us to cease further development of, or deny approval of, any product candidates we are able to develop for any or all targeted indications. Even if we are able to demonstrate that all future serious adverse events are not product-related, such occurrences could affect patient recruitment or the ability of enrolled patients to complete the trial. Moreover, if we elect, or are required, to delay, suspend or terminate any clinical trial of any product candidate we may develop, the commercial prospects of such product candidates may be harmed and our ability to generate product revenues from any of these product candidates may be delayed or eliminated. Any of these occurrences may harm our ability to identify and develop product candidates, and may harm our business, financial condition, result of operations, and prospects significantly.

Additionally, if we successfully develop a product candidate and it receives marketing approval, the FDA could require us to adopt a Risk Evaluation and Mitigation Strategy ("REMS") to ensure that the benefits of treatment with such product candidate outweighs the risks for each potential patient, which may include, among other things, a medication guide outlining the risks of the product for distribution to patients, a communication plan to health care practitioners, extensive patient monitoring, or distribution systems and processes that are highly controlled, restrictive, and more costly than what is typical for the industry. Furthermore, if we or others later identify undesirable side effects caused by any product candidate that we to develop, several potentially significant negative consequences could result, including:

- regulatory authorities may suspend or withdraw approvals of such product candidate;
- regulatory authorities may require additional warnings on the label;

- we may be required to change the way a product candidate is administered or conduct additional clinical trials;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of any product candidates we may identify and develop and could have a material adverse effect on our business, financial condition, results of operations, and prospects.

We have not tested any of our proposed delivery modes and product candidates in clinical trials.

Our proposed delivery modes, combined with our product candidates, have a limited history, if any, of being evaluated in human clinical trials. Any product candidates we develop may fail to show the desired safety and efficacy in later stages of clinical development despite having successfully advanced through initial clinical trials.

There is a high failure rate for drugs and biologics proceeding through clinical trials. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in later stage clinical trials even after achieving promising results in earlier stage clinical trials. Data obtained from preclinical and clinical activities are subject to varying interpretations, which may delay, limit, or prevent regulatory approval. In addition, regulatory delays or rejections may be encountered as a result of many factors, including changes in regulatory policy during the period of product development.

Any such adverse events may cause us to delay, limit, or terminate planned clinical trials, any of which would have a material adverse effect on our business, financial condition, results of operations, and prospects.

Because we are developing product candidates for the treatment of diseases in which there is little clinical experience using new technologies, there is increased risk that the FDA, the EMA, or other regulatory authorities may not consider the endpoints of our clinical trials to provide clinically meaningful results and that these results may be difficult to analyze.

During the regulatory review process, we will need to identify success criteria and endpoints such that the FDA, the EMA, or other regulatory authorities will be able to determine the clinical efficacy and safety profile of any product candidates we may develop. As we are initially seeking to identify and develop product candidates to treat diseases in which there is little clinical experience using new technologies, there is heightened risk that the FDA, the EMA, or other regulatory authorities may not consider the clinical trial endpoints that we propose to provide clinically meaningful results (reflecting a tangible benefit to patients). In addition, the resulting clinical data and results may be difficult to analyze. Even if the FDA does find our success criteria to be sufficiently validated and clinically meaningful, we may not achieve the pre-specified endpoints to a degree of statistical significance. This may be a particularly significant risk for many of the genetically defined diseases for which we plan to develop product candidates because many of these diseases have small patient populations, and designing and executing a rigorous clinical trial with appropriate statistical power is more difficult than with diseases that have larger patient populations. Further, even if we do achieve the pre-specified criteria, we may produce results that are unpredictable or inconsistent with the results of the non-primary endpoints or other relevant data. The FDA also weighs the benefits of a product against its risks, and the FDA may view the efficacy results in the context of safety as not being supportive of regulatory approval. Other regulatory authorities in the European Union and other countries, such as the CAT, may make similar comments with respect to these endpoints and data. Any product candidates we may develop will be based on a novel technology that makes it difficult to predict the time and cost of development and of subsequently obtaining regulatory approval. No genome editing therapeutic product has been approved in the United States or in Europe.

If clinical trials of any product candidates we may identify and develop fail to demonstrate safety and efficacy to the satisfaction of regulatory authorities or do not otherwise produce positive results, we may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of such product candidates.

Before obtaining marketing approval from regulatory authorities for the sale of any product candidates we may identify and develop, we must complete preclinical development and then conduct extensive clinical trials to demonstrate the safety and efficacy in humans of any such product candidates. Clinical testing is expensive, difficult to design and implement, can take many years to complete, 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 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. 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.

We or our collaborators may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent our ability to receive marketing approval or commercialize any product candidates we may identify and develop, including:

- delays in reaching a consensus with regulators on trial design;
- regulators, institutional review boards (“IRBs”) or independent ethics committees may not authorize us or our investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- delays in reaching or failing to reach agreement on acceptable clinical trial contracts or clinical trial protocols with prospective contract research organizations (“CROs”) and clinical trial sites;
- clinical trials of any product candidates we may develop may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development or research programs;
- difficulty in designing well-controlled clinical trials due to ethical considerations which may render it inappropriate to conduct a trial with a control arm that can be effectively compared to a treatment arm;
- difficulty in designing clinical trials and selecting endpoints for diseases that have not been well-studied and for which the natural history and course of the disease is poorly understood;
- the number of patients required for clinical trials of any product candidates we may develop may be larger than we anticipate; enrollment of suitable participants in these clinical trials, which may be particularly challenging for some of the rare genetically defined diseases we are targeting in our most advanced programs, may be delayed or slower than we anticipate; or subjects may drop out of these clinical trials 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;
- regulators, IRBs, or independent ethics committees may require that we or our investigators suspend or terminate clinical research or clinical trials of any product candidates we may develop for various reasons, including noncompliance with regulatory requirements, a finding of undesirable side effects or other unexpected characteristics, or that the participants are being exposed to unacceptable health risks or after an inspection of our clinical trial operations or trial sites;

- the cost of clinical trials of any product candidates we may develop may be greater than we anticipate;
- the supply or quality of any product candidates we may develop or other materials necessary to conduct clinical trials of any product candidates we may develop may be insufficient or inadequate, including as a result of delays in the testing, validation, manufacturing, and delivery of any product candidates we may develop to the clinical sites by us or by third parties with whom we have contracted to perform certain of those functions;
- delays in having subjects complete participation in a trial or return for post-treatment follow-up;
- clinical trial sites dropping out of a trial;
- selection of clinical endpoints that require prolonged periods of clinical observation or analysis of the resulting data;
- occurrence of serious adverse events associated with any product candidates we may develop that are viewed to outweigh their potential benefits;
- occurrence of serious adverse events in trials of the same class of agents conducted by other sponsors; and
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols.

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

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

Product development costs will also increase if we or our collaborators experience delays in testing or marketing approvals. We do not know whether any clinical trials will begin as planned, will need to be restructured, or will be completed on schedule, or at all. Significant clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize any product candidates we may develop, could allow our competitors to bring products to market before we do, and could impair our ability to successfully commercialize any product

candidates we may develop, any of which may harm our business, financial condition, results of operations, and prospects.

If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

We or our collaborators may not be able to initiate or continue clinical trials for any product candidates we identify or develop if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or analogous regulatory authorities outside the United States, or as needed to provide appropriate statistical power for a given trial. Enrollment may be particularly challenging for some of the rare genetically defined diseases we are targeting in our most advanced programs. In addition, if patients are unwilling to participate in our genome editing trials because of negative publicity from adverse events related to the biotechnology, gene therapy, or genome editing fields, competitive clinical trials for similar patient populations, clinical trials in competing products, or for other reasons, the timeline for recruiting patients, conducting studies, and obtaining regulatory approval of any product candidates we may develop may be delayed. Moreover, some of our competitors may have ongoing clinical trials for product candidates that would treat the same indications as any product candidates we may develop, and patients who would otherwise be eligible for our clinical trials may instead enroll in clinical trials of our competitors' product candidates.

Patient enrollment is also affected by other factors, including:

- severity of the disease under investigation;
- size of the patient population and process for identifying subjects;
- design of the trial protocol;
- availability and efficacy of approved medications for the disease under investigation;
- availability of genetic testing for potential patients;
- ability to obtain and maintain subject consent;
- risk that enrolled subjects will drop out before completion of the trial;
- eligibility and exclusion criteria for the trial in question;
- perceived risks and benefits of the product candidate under trial;
- perceived risks and benefits of genome editing as a therapeutic approach;
- efforts to facilitate timely enrollment in clinical trials;
- patient referral practices of physicians;
- ability to monitor patients adequately during and after treatment; and
- proximity and availability of clinical trial sites for prospective patients.

In particular, our most advanced program is focused on a rare genetically defined disease with a limited patient pool from which to draw for enrollment in a clinical trial, as the global incidence of LCA10 is estimated to be two to three per 100,000 live births worldwide. The eligibility criteria of our clinical trials will further limit the pool of available trial participants. Additionally, the process of finding and diagnosing patients may prove costly.

Our ability to successfully initiate, enroll, and complete a clinical trial in any foreign country is subject to numerous risks unique to conducting business in foreign countries, including:

- difficulty in establishing or managing relationships with CROs and physicians;
- different standards for the conduct of clinical trials;
- different standard-of-care for patients with a particular disease;
- inability to locate qualified local consultants, physicians, and partners; and
- potential burden of complying with a variety of foreign laws, medical standards, and regulatory requirements, including the regulation of pharmaceutical and biotechnology products and treatment.

Enrollment delays in our clinical trials may result in increased development costs for any product candidates we may develop, which would cause the value of our company to decline and limit our ability to obtain additional financing. If we or our collaborators have difficulty enrolling a sufficient number of patients to conduct our clinical trials as planned, we may need to delay, limit, or terminate ongoing or planned clinical trials, any of which would have an adverse effect on our business, financial condition, results of operations, and prospects.

We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs and product candidates that we identify for specific indications among many potential options. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial medicines or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable medicines. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing, or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate. Any such event could have a material adverse effect on our business, financial condition, results of operations, and prospects.

If we are unable to successfully identify patients who are likely to benefit from therapy with any medicines we develop, or experience significant delays in doing so, we may not realize the full commercial potential of any medicines we may develop.

Our success may depend, in part, on our ability to identify patients who are likely to benefit from therapy with any medicines we may develop, which requires those potential patients to have their DNA analyzed for the presence or absence of a particular sequence. For example, although Leber Congenital Amaurosis (“LCA”) can be diagnosed based on a patient’s symptoms and retinal scans, DNA samples are taken from LCA patients in order to test for the presence of the known gene mutations that cause LCA and, where possible, to identify the specific genetically defined disease, such as LCA10. If we, or any third parties that we engage to assist us, are unable to successfully identify such patients, or experience delays in doing so, then:

- our ability to develop any product candidates may be adversely affected if we are unable to appropriately select patients for enrollment in our clinical trials;
- any product candidates we develop may not receive marketing approval if safe and effective use of such product candidates depends on an *in vitro* diagnostic; and

- we may not realize the full commercial potential of any product candidates we develop that receive marketing approval if, among other reasons, we are unable to appropriately select patients who are likely to benefit from therapy with our medicines.

As a result, we may be unable to successfully develop and realize the commercial potential of any product candidates we may identify and develop, and our business, financial condition, results of operations, and prospects would be materially adversely affected.

Even if we complete the necessary clinical trials, we cannot predict when, or if, we will obtain regulatory approval to commercialize a product candidate we may develop, and any such approval may be for a more narrow indication than we seek.

We cannot commercialize a product candidate until the appropriate regulatory authorities have reviewed and approved the product candidate. Even if any product candidates we may develop meet their safety and efficacy endpoints in clinical trials, the regulatory authorities may not complete their review processes in a timely manner, or we may not be able to obtain regulatory approval. Additional delays may result if an FDA Advisory Committee or other regulatory authority recommends non-approval or restrictions on approval. In addition, we may experience delays or rejections based upon additional government regulation from future legislation or administrative action, or changes in regulatory authority policy during the period of product development, clinical trials, and the review process.

Regulatory authorities also may approve a product candidate for more limited indications than requested or they may impose significant limitations in the form of narrow indications, warnings or a REMS. These regulatory authorities may require precautions or contra-indications with respect to conditions of use, or they may grant approval subject to the performance of costly post-marketing clinical trials. In addition, regulatory authorities may not approve the labeling claims that are necessary or desirable for the successful commercialization of any product candidates we may develop. Any of the foregoing scenarios could materially harm the commercial prospects for any product candidates we may develop and materially adversely affect our business, financial condition, results of operations, and prospects.

Even if any product candidates we may develop receive marketing approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors, and others in the medical community necessary for commercial success.

The commercial success of any of our product candidates will depend upon its degree of market acceptance by physicians, patients, third-party payors, and others in the medical community. Ethical, social, and legal concerns about genomic medicines generally and genome editing technologies specifically could result in additional regulations restricting or prohibiting our products. Even if any product candidates we may develop receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, healthcare payors, and others in the medical community. The degree of market acceptance of any product candidates we may develop, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of such product candidates as demonstrated in clinical trials;
- the potential and perceived advantages compared to alternative treatments;
- the limitation to our targeted patient population and limitations or warnings contained in approved labeling by the FDA or other regulatory authorities;
- the ability to offer our medicines for sale at competitive prices;
- convenience and ease of administration compared to alternative treatments;
- the clinical indications for which the product candidate is approved by the FDA, the European Commission, or other regulatory agencies;

- public attitudes regarding genomic medicine generally and genome editing technologies specifically;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies, as well as their willingness to accept a therapeutic intervention that involves the editing of the patient's genome;
- product labeling or product insert requirements of the FDA, the EMA, or other regulatory authorities, including any limitations or warnings contained in a product's approved labeling;
- relative convenience and ease of administration;
- the timing of market introduction of competitive products;
- publicity concerning our products or competing products and treatments;
- the strength of marketing and distribution support;
- sufficient third-party coverage or reimbursement; and
- the prevalence and severity of any side effects.

If any product candidates we develop do not achieve an adequate level of acceptance, we may not generate significant product revenues, and we may not become profitable.

If, in the future, we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market any product candidates we may develop, we may not be successful in commercializing those product candidates if and when they are approved.

We do not have a sales or marketing infrastructure and have no experience in the sale, marketing, or distribution of pharmaceutical products. To achieve commercial success for any approved medicine for which we retain sales and marketing responsibilities, we must either develop a sales and marketing organization or outsource these functions to third parties. In the future, we may choose to build a focused sales, marketing, and commercial support infrastructure to sell, or participate in sales activities with our collaborators for, some of our product candidates if and when they are approved.

There are risks involved with both establishing our own commercial capabilities and entering into arrangements with third parties to perform these services. For example, recruiting and training a sales force or reimbursement specialists is expensive and time consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing and other commercialization capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our commercialization personnel.

Factors that may inhibit our efforts to commercialize our medicines on our own include:

- our inability to recruit and retain adequate numbers of effective sales, marketing, reimbursement, customer service, medical affairs, and other support personnel;
- the inability of sales personnel to obtain access to physicians or persuade adequate numbers of physicians to prescribe any future medicines;
- the inability of reimbursement professionals to negotiate arrangements for formulary access, reimbursement, and other acceptance by payors;

- restricted or closed distribution channels that make it difficult to distribute our products to segments of the patient population;

- the lack of complementary medicines to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and

- unforeseen costs and expenses associated with creating an independent commercialization organization.

If we enter into arrangements with third parties to perform sales, marketing, commercial support, and distribution services, our product revenues or the profitability of these product revenues to us may be lower than if we were to market and sell any medicines we may develop ourselves. In addition, we may not be successful in entering into arrangements with third parties to commercialize our product candidates or may be unable to do so on terms that are favorable to us. We may have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our medicines effectively. If we do not establish commercialization capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our product candidates.

We face significant competition in an environment of rapid technological change, and there is a possibility that our competitors may achieve regulatory approval before us or develop therapies that are safer or more advanced or effective than ours, which may harm our financial condition and our ability to successfully market or commercialize any product candidates we may develop.

The development and commercialization of new drug products is highly competitive. Moreover, the biotechnology and pharmaceutical industries, including in the gene therapy and genome editing fields, are characterized by rapidly advancing technologies, intense competition, and a strong emphasis on intellectual property and proprietary products. We will face competition with respect to any product candidates that we may seek to develop or commercialize in the future from major pharmaceutical companies, specialty pharmaceutical companies, and biotechnology companies worldwide. Potential competitors also include academic institutions, government agencies, and other public and private research organizations that conduct research, seek patent protection, and establish collaborative arrangements for research, development, manufacturing, and commercialization.

There are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of products for the treatment of the disease indications for which we have research programs. Some of these competitive products and therapies are based on scientific approaches that are the same as or similar to our approach, and others are based on entirely different approaches.

Our platform and product focus is the development of therapies using CRISPR technology. Companies developing CRISPR technology or therapies using CRISPR technology include Caribou Biosciences, Casebia Therapeutics, CRISPR Therapeutics, ERS Genomics, Intellia Therapeutics, and TRACR Hematology. There are additional companies developing therapies using additional genome editing technologies, including transcription activator-like effector nucleases, meganucleases, Mega-TALs, and zinc finger nucleases. These companies include bluebird bio, Cellectis, Poseida Therapeutics, Precision Biosciences, and Sangamo Therapeutics. Additional companies developing gene therapy products include Abeona Therapeutics, Adverum Biotechnologies, AGTC Therapeutics, Audentes Therapeutics, Exonics Therapeutics, Homology Medicines, Nightstar Therapeutics, REGENXBIO, Spark Therapeutics, uniQure, and Voyager Therapeutics. In addition to competition from other genome editing therapies or gene therapies, any products we may develop may also face competition from other types of therapies, such as small molecule, antibody, or protein therapies.

Many of our current or potential competitors, either alone or with their collaboration partners, may have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals, and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology, and gene therapy industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These

competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient, or are less expensive than any products that we may develop or that would render any products that we may develop obsolete or non-competitive. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. Additionally, technologies developed by our competitors may render our potential product candidates uneconomical or obsolete, and we may not be successful in marketing any product candidates we may develop against competitors.

In addition, as a result of the expiration or successful challenge of our patent rights, we could face more litigation with respect to the validity and/or scope of patents relating to our competitors' products. The availability of our competitors' products could limit the demand, and the price we are able to charge, for any products that we may develop and commercialize.

Even if we are able to commercialize any product candidates, such products may become subject to unfavorable pricing regulations, third-party reimbursement practices, or healthcare reform initiatives, which would harm our business.

The regulations that govern marketing approvals, pricing, and reimbursement for new medicines vary widely from country to country. In the United States, recently enacted legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals. Some countries require approval of the sale price of a medicine before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain marketing approval for a medicine in a particular country, but then be subject to price regulations that delay our commercial launch of the medicine, possibly for lengthy time periods, and negatively impact the revenues we are able to generate from the sale of the medicine in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if any product candidates we may develop obtain marketing approval.

Our ability to commercialize any medicines successfully also will depend in part on the extent to which reimbursement for these medicines and related treatments will be available from government health administration authorities, private health insurers, and other organizations. Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that reimbursement will be available for any medicine that we commercialize and, if reimbursement is available, the level of reimbursement. Reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If reimbursement is not available or is available only to limited levels, we may not be able to successfully commercialize any product candidate for which we obtain marketing approval.

There may be significant delays in obtaining reimbursement for newly approved medicines, and coverage may be more limited than the purposes for which the medicine is approved by the FDA or similar regulatory authorities outside the United States. Moreover, eligibility for reimbursement does not imply that any medicine will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale, and distribution. Interim reimbursement levels for new medicines, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the medicine and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost medicines and may be incorporated into existing payments for other services. Net prices for medicines may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict

imports of medicines from countries where they may be sold at lower prices than in the United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our inability to promptly obtain coverage and profitable payment rates from both government-funded and private payors for any approved medicines we may develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize medicines, and our overall financial condition.

Due to the novel nature of our technology and the potential for any product candidates we may develop to offer therapeutic benefit in a single administration or limited number of administrations, we face uncertainty related to pricing and reimbursement for these product candidates.

Our initial target patient populations are relatively small, as a result of which the pricing and reimbursement of any product candidates we may develop, if approved, must be adequate to support the necessary commercial infrastructure. If we are unable to obtain adequate levels of reimbursement, our ability to successfully market and sell any such product candidates will be adversely affected. The manner and level at which reimbursement is provided for services related to any product candidates we may develop, e.g., for administration of our product to patients, is also important. Inadequate reimbursement for such services may lead to physician resistance and adversely affect our ability to market or sell our products. In addition, it may be necessary for us to develop new reimbursement models in order to realize adequate value. Payors may not be able or willing to adopt such new models, and patients may be unable to afford that portion of the cost that such models may require them to bear. If we determine such new models are necessary but we are unsuccessful in developing them, or if such models are not adopted by payors, our business, financial condition, results of operations, and prospects could be adversely affected.

We expect the cost of a single administration of genomic medicine products, such as those we are seeking to develop, to be substantial, when and if they achieve regulatory approval. We expect that coverage and reimbursement by government and private payors will be essential for most patients to be able to afford these treatments. Accordingly, sales of any such product candidates will depend substantially, both domestically and abroad, on the extent to which the costs of any product candidates we may develop will be paid by health maintenance, managed care, pharmacy benefit, and similar healthcare management organizations, or will be reimbursed by government authorities, private health coverage insurers, and other third-party payors. Coverage and reimbursement by a third-party payor may depend upon several factors, including the third-party payor’s determination that use of a product is:

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

Obtaining coverage and reimbursement for a product from third-party payors is a time-consuming and costly process that could require us to provide to the payor supporting scientific, clinical, and cost-effectiveness data. There is significant uncertainty related to third-party coverage and reimbursement of newly approved products. We may not be able to provide data sufficient to gain acceptance with respect to coverage and reimbursement. If coverage and reimbursement are not available, or are available only at limited levels, we may not be able to successfully commercialize any product candidates we may develop. Even if coverage is provided, the approved reimbursement amount may not be adequate to realize a sufficient return on our investment.

Moreover, the downward pressure on healthcare costs in general, particularly prescription drugs and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products such as ours. If we are unable to obtain adequate levels of reimbursement, our ability to successfully market and sell any product candidates we may develop will be harmed.

If the market opportunities for any product candidates we may develop are smaller than we believe they are, our revenues may be adversely affected, and our business may suffer. Because the target patient populations for many of the product candidates we may develop are small, we must be able to successfully identify patients and achieve a significant market share to maintain profitability and growth.

Some of our most advanced programs focus on treatments for rare genetically defined diseases. Our projections of both the number of people who have these diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with product candidates we may develop, are based on estimates. These estimates may prove to be incorrect and new studies may change the estimated incidence or prevalence of these diseases. The number of patients in the United States, Europe, and elsewhere may turn out to be lower than expected, and patients may not be amenable to treatment with our products, or may become increasingly difficult to identify or gain access to, all of which would adversely affect our business, financial condition, results of operations, and prospects.

Product liability lawsuits against us could cause us to incur substantial liabilities and could limit commercialization of any medicines that we may develop.

We face an inherent risk of product liability exposure related to the testing in human clinical trials of any product candidates we may develop and will face an even greater risk if we commercially sell any medicines that we may develop. If we cannot successfully defend ourselves against claims that our product candidates or medicines caused injuries, we could incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates or medicines that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- significant time and costs to defend the related litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue; and
- the inability to commercialize any medicines that we may develop.

Although we maintain product liability insurance coverage, it may not be adequate to cover all liabilities that we may incur. We anticipate that we will need to increase our insurance coverage when we begin clinical trials and if we successfully commercialize any medicine. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

If we or any contract manufacturers and suppliers we engage 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 and any contract manufacturers and suppliers we engage are subject to numerous federal, state, and local environmental, health, and safety laws, regulations, and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment, and disposal of hazardous and regulated materials and wastes; the emission and discharge of hazardous materials into the ground, air, and water; and employee health and safety. Our operations involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. Our operations also produce hazardous waste. 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. Under certain environmental laws, we could be held

responsible for costs relating to any contamination at our current or past facilities and at third-party facilities. We also could incur significant costs associated with civil or criminal fines and penalties.

Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research and product development efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not carry specific biological or hazardous waste insurance coverage, and our commercial general liability and umbrella liability policies (under which we currently have an aggregate of $7.0 million in coverage) specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals could be suspended, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In addition, we may incur substantial costs in order to comply with current or future environmental, health, and safety laws, regulations, and permitting requirements. These current or future laws, regulations, and permitting requirements may impair our research, development, or production efforts. Failure to comply with these laws, regulations, and permitting requirements also may result in substantial fines, penalties, or other sanctions or business disruption, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Any third-party contract manufacturers and suppliers we engage will also be subject to these and other environmental, health, and safety laws and regulations. Liabilities they incur pursuant to these laws and regulations could result in significant costs or an interruption in operations, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Genomic medicines are novel, and any product candidates we develop may be complex and difficult to manufacture. We could experience production problems that result in delays in our development or commercialization programs, limit the supply of our products, or otherwise harm our business.

Any product candidates we may develop will likely require processing steps that are more complex than those required for most chemical pharmaceuticals. Moreover, unlike chemical pharmaceuticals, the physical and chemical properties of a biologic such as the product candidates we intend to develop generally cannot be fully characterized. As a result, assays of the finished product may not be sufficient to ensure that the product will perform in the intended manner. Problems with the manufacturing process, even minor deviations from the normal process, could result in product defects or manufacturing failures that result in lot failures, product recalls, product liability claims, or insufficient inventory. If we successfully develop product candidates, we may encounter problems achieving adequate quantities and quality of clinical-grade materials that meet FDA, EMA or other comparable applicable foreign standards or specifications with consistent and acceptable production yields and costs.

In addition, the FDA, the EMA, and other regulatory authorities may require us to submit samples of any lot of any approved product together with the protocols showing the results of applicable tests at any time. Under some circumstances, the FDA, the EMA, or other regulatory authorities may require that we not distribute a lot until the agency authorizes its release. Slight deviations in the manufacturing process, including those affecting quality attributes and stability, may result in unacceptable changes in the product that could result in lot failures or product recalls. Lot failures or product recalls could cause us to delay clinical trials or product launches, which could be costly to us and otherwise harm our business, financial condition, results of operations, and prospects.

We also may encounter problems hiring and retaining the experienced scientific, quality control, and manufacturing personnel needed to manage our manufacturing process, which could result in delays in our production or difficulties in maintaining compliance with applicable regulatory requirements.

Given the nature of biologics manufacturing, there is a risk of contamination during manufacturing. Any contamination could materially harm our ability to produce product candidates on schedule and could harm our results of operations and cause reputational damage. Some of the raw materials that we anticipate will be required in our manufacturing process are derived from biologic sources. Such raw materials are difficult to procure and may be subject to contamination or recall. A material shortage, contamination, recall, or restriction on the use of biologically derived substances in the manufacture of any product candidates we may develop could adversely impact or disrupt the commercial manufacturing or the production of clinical material, which could materially harm our development timelines and our business, financial condition, results of operations, and prospects.

Any problems in our manufacturing process or the facilities with which we contract could make us a less attractive collaborator for potential partners, including larger pharmaceutical companies and academic research institutions, which could limit our access to additional attractive development programs. Problems in third-party manufacturing process or facilities also could restrict our ability to meet market demand for any products we develop and commercialize.

Risks Related to Our Dependence on Third Parties

We expect to depend on collaborations with third parties for the research, development, and commercialization of certain of the product candidates we may develop or for development of certain of our research programs. If any such collaborations are not successful, we may not be able to capitalize on the market potential of those product candidates or research programs.

We anticipate seeking third-party collaborators for the research, development, and commercialization of certain of the product candidates we may develop or for development of certain of our research programs. For example, in May 2015, we entered into a collaboration with Juno Therapeutics focused on research and development of engineered T cell immunotherapies that utilize or incorporate our genome editing technologies, and, in March 2017, we entered into a strategic alliance with Allergan focused on discovering, developing, and commercializing new gene editing medicines for a range of ocular disorders. Our likely collaborators for any other collaboration arrangements include large and mid-size pharmaceutical companies, regional and national pharmaceutical companies, and biotechnology companies. If we enter into any such arrangements with any third parties, we will likely have limited control over the amount and timing of resources that our collaborators dedicate to the development or commercialization of any product candidates we may seek to develop with them and, in the case of our strategic alliance with Allergan, whether they exercise any additional options to commercialize a product. Our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. We cannot predict the success of any collaboration that we enter into.

Collaborations involving our research programs or any product candidates we may develop, including our collaboration with Juno Therapeutics, and alliance arrangements we may enter into under which our research programs may be involved and potential product candidates may be developed, including our strategic alliance with Allergan, pose the following risks to us:

- Collaborators may have significant discretion in determining the efforts and resources that they will apply to these collaborations.
- Collaborators may not pursue development and commercialization of any product candidates we may develop or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in the collaborator's strategic focus or available funding or external factors such as an acquisition that diverts resources or creates competing priorities.
- Collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials, or require a new formulation of a product candidate for clinical testing.
- Collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our medicines or product candidates if the collaborators believe that competitive products

are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours.

- Collaborators with marketing and distribution rights to one or more medicines may not commit sufficient resources to the marketing and distribution of such medicine or medicines.
- Collaborators may not properly obtain, maintain, enforce, or defend our intellectual property or proprietary rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our proprietary information or expose us to potential litigation.
- Disputes may arise between the collaborators and us that result in the delay or termination of the research, development, or commercialization of our medicines or product candidates or that result in costly litigation or arbitration that diverts management attention and resources.
- We may lose certain valuable rights under circumstances identified in our collaborations, including if we undergo a change of control.
- Collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates.
- Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all. If a present or future collaborator of ours were to be involved in a business combination, the continued pursuit and emphasis on our product development or commercialization program under such collaboration could be delayed, diminished, or terminated.

If our collaborations do not result in the successful development and commercialization of products, or if one of our collaborators terminates its agreement with us, we may not receive any future research funding or milestone or royalty payments under the collaboration, as the case may be. If we do not receive the funding we expect under these agreements, our development of product candidates could be delayed, and we may need additional resources to develop product candidates. In addition, if one of our collaborators terminates its agreement with us, we may find it more difficult to find a suitable replacement collaborator or attract new collaborators, and our development programs may be delayed or the perception of us in the business and financial communities could be adversely affected. All of the risks relating to product development, regulatory approval, and commercialization described in this Quarterly Report on Form 10-Q apply to the activities of our collaborators.

We may in the future decide to collaborate with pharmaceutical and biotechnology companies for the development and potential commercialization of any product candidates we may develop. These relationships, or those like them, may require us to incur non-recurring and other charges, increase our near- and long-term expenditures, issue securities that dilute our existing stockholders, or disrupt our management and business. In addition, we could face significant competition in seeking appropriate collaborators, and the negotiation process is time-consuming and complex. Our ability to reach a definitive collaboration agreement will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration, and the proposed collaborator's evaluation of several factors. If we license rights to any product candidates we or our collaborators may develop, we may not be able to realize the benefit of such transactions if we are unable to successfully integrate them with our existing operations and company culture.

If we are not able to establish collaborations on commercially reasonable terms, we may have to alter our development and commercialization plans.

Our product development and research programs and the potential commercialization of any product candidates we may develop will require substantial additional cash to fund expenses. For some of the product candidates we may develop or certain of our research programs, we may decide to collaborate with other pharmaceutical and biotechnology companies for the development and potential commercialization of those product candidates or programs.

We face significant competition in seeking appropriate collaborators. Whether we reach a definitive agreement for a collaboration 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 a number of factors. Those factors may include the design or results of clinical trials, the likelihood of approval by the FDA or similar regulatory authorities outside the United States, the potential market for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing products, the existence of uncertainty with respect to our ownership of technology, which can exist if there is a challenge to such ownership without regard to the merits of the challenge, and industry and market conditions generally. The collaborator may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us.

We may also be restricted under existing collaboration agreements from entering into future agreements on certain terms with potential collaborators or allies. For example, during the research program term of our collaboration with Juno Therapeutics, we may not directly or indirectly license, fund, enable, or participate in any research, development, manufacture, or commercialization of engineered T cells with chimeric antigen receptors and T cell receptors in the field of diagnosis, treatment, or prevention of cancer in humans through the use of engineered T cells, excluding the diagnosis, treatment, or prevention of medullary cystic kidney disease.

Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future 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 or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to 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. If we do not have sufficient funds, we may not be able to further develop product candidates or bring them to market and generate product revenue.

We expect to rely on third parties to conduct our clinical trials and some aspects of our research and preclinical testing, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials, research, or testing.

We expect to rely on third parties, such as CROs, clinical data management organizations, medical institutions, and clinical investigators, to conduct our clinical trials. We currently rely and expect to continue to rely on third parties to conduct some aspects of our research and preclinical testing. Any of these third parties may terminate their engagements with us at any time. If we need to enter into alternative arrangements, it would delay our product development activities.

Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our responsibilities. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with standards, commonly referred to as Good Clinical Practices, for conducting, recording, and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity, and confidentiality of trial participants are protected. We also are required to register ongoing clinical trials and post the results of completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within certain timeframes. Failure to do so can result in fines, adverse publicity, and civil and criminal sanctions.

Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. If these third parties do not successfully carry out their contractual duties, meet expected deadlines, or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to

obtain, or may be delayed in obtaining, marketing approvals for any product candidates we may develop and will not be able to, or may be delayed in our efforts to, successfully commercialize our medicines.

We also expect to rely on other third parties to store and distribute drug supplies for our clinical trials. Any performance failure on the part of our distributors could delay clinical development or marketing approval of any product candidates we may develop or commercialization of our medicines, producing additional losses and depriving us of potential product revenue.

We contract with third parties for the manufacture of materials for our research programs and preclinical studies and expect to continue to do so for clinical trials and for commercialization of any product candidates that we may develop. This reliance on third parties increases the risk that we will not have sufficient quantities of such materials, product candidates, or any medicines that we may develop and commercialize, or that such supply will not be available to us at an acceptable cost, which could delay, prevent, or impair our development or commercialization efforts.

We do not have any manufacturing facilities. We currently rely on third-party manufacturers for the manufacture of our materials for preclinical studies and expect to continue to do so for clinical testing and for commercial supply of any product candidates that we may develop and for which we or our collaborators obtain marketing approval. We do not have a long term supply agreement with any of the third-party manufacturers, and we purchase our required supply on a purchase order basis.

We may be unable to establish any agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including:

- the possible breach of the manufacturing agreement by the third party;
- the possible termination or nonrenewal of the agreement by the third party at a time that is costly or inconvenient for us; and
- reliance on the third party for regulatory compliance, quality assurance, safety, and pharmacovigilance and related reporting.

Third-party manufacturers may not be able to comply with cGMP regulations or similar regulatory requirements outside the United States. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocations, seizures or recalls of product candidates or medicines, operating restrictions, and criminal prosecutions, any of which could significantly and adversely affect supplies of our medicines and harm our business, financial condition, results of operations, and prospects.

Any medicines that we may develop may compete with other product candidates and products for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us.

Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval. We do not currently have arrangements in place for redundant supply for bulk drug substances. If any one of our current contract manufacturer cannot perform as agreed, we may be required to replace that manufacturer. Although we believe that there are several potential alternative manufacturers who could manufacture any product candidates we may develop, we may incur added costs and delays in identifying and qualifying any such replacement.

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

Risks Related to Our Intellectual Property

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

Our success depends in large part on our ability to obtain and maintain patent protection in the United States and other countries with respect to our CRISPR platform technology and any proprietary product candidates and technology we develop. We seek to protect our proprietary position by in-licensing intellectual property relating to our platform technology and filing patent applications in the United States and abroad related to our technologies and product candidates that are important to our business. If we or our licensors are unable to obtain or maintain patent protection with respect to our CRISPR platform technology and any proprietary products and technology we develop, our business, financial condition, results of operations, and prospects could be materially harmed.

No consistent policy regarding the scope of claims allowable in the field of genome editing, including CRISPR technology, has emerged in the United States. The scope of patent protection outside of the United States is also uncertain. Changes in either the patent laws or their interpretation in the United States and other countries may diminish our ability to protect our inventions, obtain, maintain, and enforce our intellectual property rights and, more generally, could affect the value of our intellectual property or narrow the scope of our owned and licensed patents. With respect to both in-licensed and owned intellectual property, we cannot predict whether the patent applications we and our licensors are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient protection from competitors.

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

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. As a result, the issuance, scope, validity, enforceability, and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or product candidates or which effectively prevent others from commercializing competitive technologies and product candidates.

Moreover, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Even if patent applications we license or own currently or in the future issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors or other third parties from competing with us, or otherwise provide us with any competitive advantage. Any patents that we hold or in-license may be challenged, narrowed, circumvented, or invalidated by third parties. Consequently, we do not know whether any of our platform advances and product candidates will be protectable or remain protected by valid and enforceable patents. Our competitors or other third parties may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner. For example, we are aware that third parties have suggested the use of the CRISPR technology in conjunction with a protein other than Cas9 or Cpf1. Our owned and in-licensed patents may not cover CRISPR technology in conjunction with a protein other than Cas9 or Cpf1. If our

competitors commercialize the CRISPR technology in conjunction with a protein other than Cas9 or Cpf1, our business, financial condition, results of operations, and prospects could be materially adversely affected.

The issuance of a patent is not conclusive as to its inventorship, scope, validity, or enforceability, and our patents may be challenged in the courts or patent offices in the United States and abroad. Our licensors are currently, and we or our licensors may in the future become, subject to a third party pre-issuance submission of prior art to the United States Patent and Trademark Office (the "USPTO") or opposition, derivation, revocation, re-examination, post-grant and *inter partes* review, or interference proceedings and other similar proceedings challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. Moreover, we, or one of our licensors, may have to participate in interference proceedings declared by the USPTO to determine priority of invention or in post-grant challenge proceedings, such as oppositions in a foreign patent office, that challenge priority of invention or other features of patentability. Such challenges may result in loss of patent rights, loss of exclusivity, or in patent claims being narrowed, invalidated, or held unenforceable, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and product candidates. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us. As discussed below, some of our in-licensed patents are subject to interference, opposition, and *ex parte* re-examination proceedings and therefore subject to these risks.

In addition, given the amount of time required for the development, testing, and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our intellectual property may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours. Moreover, some of our owned and in-licensed patents and patent applications are, and may in the future be, co-owned with third parties. If we are unable to obtain an exclusive license to any such third party co-owners' interest in such patents or patent applications, such co-owners may be able to license their rights to other third parties, including our competitors, and our competitors could market competing products and technology. In addition, we or our licensors may need the cooperation of any such co-owners of our owned and in-licensed patents in order to enforce such patents against third parties, and such cooperation may not be provided to us or our licensors. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

Furthermore, our owned and in-licensed patents may be subject to a reservation of rights by one or more third parties. For example, the research resulting in certain of our owned and in-licensed patent rights and technology was funded in part by the U.S. government. As a result, the U.S. government has certain rights, including march-in rights, to such patent rights and technology. When new technologies are developed with government funding, the government generally obtains certain rights in any resulting patents, including a non-exclusive license authorizing the government to use the invention. For example, our licensors, including The Broad Institute, Inc. ("Broad"), have granted the U.S. government a non-exclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States, the inventions described in certain of our in-licensed patents and patent applications, including certain aspects of our in-licensed CRISPR technology. If the government decides to exercise these rights, it is not required to engage us as its contractor in connection with doing so. These rights may permit the U.S. government to disclose our confidential information to third parties and to exercise march-in rights to use or allow third parties to use our licensed technology. The U.S. government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to U.S. industry. In addition, our rights in such inventions may be subject to certain requirements to manufacture products embodying such inventions in the United States. Any exercise by the government of any of the foregoing rights could harm our competitive position, business, financial condition, results of operations, and prospects.

Our rights to develop and commercialize our technology and product candidates are subject, in part, to the terms and conditions of licenses granted to us by others.

We are heavily reliant upon licenses to certain patent rights and proprietary technology from third parties that are important or necessary to the development of our genome editing technology, including our CRISPR technology, and product candidates. 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 technology and 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 of our licenses. For example, pursuant to our license agreements with Broad, and Broad and the President and Fellows of Harvard College ("Harvard"), the licensors may, under certain circumstances, grant a license to the patents that are the subject of such license agreements to a third party. Such third party would have full rights to the patent rights that are the subject of such licenses, which could impact our competitive position and enable a third party to commercialize products similar to our future product candidates and technology. Furthermore, under these license agreements, Broad has the right, after specified periods of time and subject to certain limitations, to designate gene targets for which Broad, whether alone or together with an affiliate or third party, has an interest in researching and developing products that would otherwise be covered by rights licensed to us under the agreements. Any of the foregoing would narrow the scope of our exclusive rights to the patents and patent applications we have in-licensed from Broad. The terms of these license agreements are described more fully under "Part I—Business—Our Collaborations and Licensing Strategy" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017. In addition, our rights to our in-licensed patents and patent applications are dependent, in part, on inter-institutional or other operating agreements between the joint owners of such in-licensed patents and patent applications. If one or more of such joint owners breaches such inter-institutional or operating agreements, our rights to such in-licensed patents and patent applications may be adversely affected, which could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

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 from third parties. For example, pursuant to each of our intellectual property licenses with Broad, Harvard, and The General Hospital Corporation, d/b/a Massachusetts General Hospital, our licensors retain control of preparation, filing, prosecution, and maintenance, and, in certain circumstances, enforcement and defense of their patents and patent applications. 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 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 any of our products that are subject of such licensed rights could be adversely affected. Additionally, given that we are required to reimburse our licensors for all of their expenses related to the prosecution, maintenance, enforcement and defense of patents and patent applications that we in-license from them, the ongoing nature of the interference, opposition, and re-examination proceedings involving the patents licensed to us under our license agreement with Harvard and Broad and our obligation to make such reimbursements are not subject to any limitations, we anticipate that our obligation to reimburse our licensors for expenses related to these matters will continue to be substantial. In connection with these reimbursement obligations, we incurred expenses in aggregate of $18.7 million, $23.6 million, and $9.4 million during the years ended December 31, 2017, 2016, and 2015, respectively, and we incurred an aggregate of $11.4 million during the nine months ended September 30, 2018.

Our licensors may have relied on third party consultants or collaborators or on funds from third parties such that our licensors are not the sole and exclusive owners of the patents we in-licensed. For example, certain patent applications licensed to us by Broad are co-owned with NIH. Broad does not and does not purport to grant any rights in NIH's interest in these patent applications under our agreement. If other third parties have ownership rights to our in-licensed patents, they may be able to license such patents to our competitors, and our competitors could market competing products and technology. This could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

In spite of our best efforts, our licensors might conclude that we have materially breached our license agreements and might therefore terminate the license agreements, thereby removing our ability to develop and commercialize products and technology covered by these license agreements. If these in-licenses are terminated, or if the

underlying patents fail to provide the intended exclusivity, competitors would have the freedom to seek regulatory approval of, and to market, products identical to ours. In addition, we may seek to obtain additional licenses from our licensors and, in connection with obtaining such licenses, we may agree to amend our existing licenses in a manner that may be more favorable to the licensors, including by agreeing to terms that could enable third parties (potentially including our competitors) to receive licenses to a portion of the intellectual property that is subject to our existing licenses. Any of these events could have a material adverse effect on our competitive position, business, financial conditions, results of operations, and prospects.

Some of our in-licensed patents are subject to priority and validity disputes. In addition, our owned and in-licensed patents and other intellectual property may be subject to further priority and validity disputes, and other similar intellectual property proceedings including inventorship disputes. If we or our licensors are unsuccessful in any of these proceedings, we may be required to obtain licenses from third parties, which may not be available on commercially reasonable terms or at all, or to cease the development, manufacture, and commercialization of one or more of the product candidates we may develop, which could have a material adverse impact on our business.

On January 11, 2016, the Patent Trial and Appeal Board of the USPTO ("PTAB") declared an interference between a pending U.S. patent application (U.S. Serial No. 13/842,859) that is owned by the University of California, the University of Vienna, and Emmanuelle Charpentier and 12 U.S. patents (U.S. Patent Nos. 8,697,359; 8,771,945; 8,795,965; 8,865,406; 8,871,445; 8,889,356; 8,895,308; 8,906,616; 8,932,814; 8,945,839; 8,993,233; and 8,999,641) that are co-owned by Broad and the Massachusetts Institute of Technology ("MIT"), and in some cases Harvard, and in-licensed by us. On March 17, 2016, the PTAB re-declared the interference to add a pending U.S. patent application (U.S. Serial No. 14/704,551) that is co-owned by Broad, MIT, and Harvard, and in-licensed by us. An interference is a proceeding within the USPTO to determine priority of invention of the subject matter of patent claims filed by different parties. This proceeding is only potentially available for patent applications filed in the United States on or before March 15, 2013 and related continuing patent applications. In the interference, the University of California, the University of Vienna and Emmanuelle Charpentier asserted that inventors from the University of California and the University of Vienna, and Emmanuelle Charpentier made certain inventions claimed in the Broad, MIT and Harvard patents before the inventors from Broad, MIT and, in certain cases, Harvard.

In the declared interference, the University of California, acting on behalf of itself and the University of Vienna, and Emmanuelle Charpentier were designated as the senior party and Broad was designated as the junior party. In an interference proceeding, the junior party has the burden of proof and presents its priority evidence first. The declaration of interference defined the invention that is subject to the declaration of interference, also referred to as "the count," as relating to a method that involves contacting a target DNA in a eukaryotic cell with certain defined CRISPR/Cas9 components for the purpose of cleaving or editing a target DNA molecule or modulating transcription of at least one gene encoded thereon. All of the claims in the pending U.S. patent application that is owned by the University of California, the University of Vienna, and Emmanuelle Charpentier and all of the claims in the 12 U.S. patents and one pending U.S. patent application that are co-owned by Broad and MIT, and in some cases Harvard, and in-licensed by us were implicated in the interference. The University of California, the University of Vienna, and Emmanuelle Charpentier are listed as applicants on U.S. Serial No. 13/842,859. The University of California derives rights in U.S. Serial No. 13/842,859 from an assignment by Dr. Jennifer Doudna and certain other inventors listed on such application. Caribou Biosciences has reported that it has an exclusive license to patent rights from the University of California and the University of Vienna. Intellia Therapeutics has reported that it has an exclusive license to such rights from Caribou Biosciences in certain fields. CRISPR Therapeutics, ERS Genomics, and TRACR Hematology, also our competitors, have reported that they have exclusively licensed such patent rights from Emmanuelle Charpentier. Further, Dr. Doudna was a founder of our company and entered into a consulting agreement with us at the time of our founding. However, Dr. Doudna gave notice of termination of that agreement in May 2014 after less than seven months of service, and she has had no further engagement in our business since that time. Dr. Doudna is also a founder of Caribou Biosciences and has been publicly identified as an advisor to Intellia Therapeutics, each of which is one of our competitors.

As a result of the declaration of interference, an adversarial proceeding in the USPTO before the PTAB was initiated. An interference is declared to ultimately determine priority, specifically which party was first to invent the commonly claimed invention. An interference is typically divided into two phases. The first phase is typically referred to as the motions or preliminary motions phase while the second is referred to as the priority phase. In the first phase, each

party may raise issues including but not limited to those relating to the patentability of a party's claims based on prior art, written description, and enablement. A party also may seek an earlier priority benefit or may challenge whether the declaration of interference was proper in the first place. Priority, or a determination of who first invented the commonly claimed invention, is determined in the second phase of an interference.

On February 15, 2017, the PTAB held that there is no interference-in-fact between the parties for the subject matter of the count. A judgment of no interference-in-fact means that no interference is needed to resolve priority between the parties because the PTAB determined that our in-licensed claims are directed to subject matter that is patentably distinct from those of the University of California, the University of Vienna, and Emmanuelle Charpentier. The interference proceeding has therefore ended without reaching the second priority phase. Therefore, the 12 U.S. patents and one U.S. patent application that we have in-licensed from Broad, acting on behalf of itself, MIT, and Harvard, as well as the U.S. patent application owned by the University of California, the University of Vienna, and Emmanuelle Charpentier, with respect to which the PTAB had declared an interference were not modified or revoked as a result of this interference proceeding.

On April 12, 2017, the University of California, the University of Vienna, and Emmanuelle Charpentier appealed to the U.S. Court of Appeals for the Federal Circuit for review of the no interference-in-fact holding made by the PTAB in the interference proceeding. On September 10, 2018, the Court of Appeals for the Federal Circuit (the "CAFC") affirmed the PTAB's holding of no interference-in-fact. The University of California, the University of Vienna, and Emmanuelle Charpentier have until December 9, 2018 to file a Petition for Writ of Certiorari with the U.S. Supreme Court if they want to seek review of this decision from the Court of Appeals for the Federal Circuit. A final, non-appealable judgment of no interference-in-fact bars any further interference between the same parties for claims to the same invention as the count of the interference. However, as discussed below, certain of these 12 U.S. patents and one U.S. patent application are, or may in the future be, subject to further intellectual property proceedings and disputes, including interference proceedings.

The University of California, the University of Vienna, and Emmanuelle Charpentier or other third parties may file a separate Suggestion of Interference against the Broad patents that were subject to the interference or other U.S. patents and patent applications that we own or in-license. For example, ToolGen Inc. ("ToolGen") filed Suggestions of Interference in the USPTO on April 13, 2015 suggesting that they believe some of the claims in pending U.S. applications owned by ToolGen (U.S. Serial No. 14/685,568 and U.S. Serial No. 14/685,510) interfere with certain claims in five U.S. patents, which we have in-licensed from Broad, acting on behalf of itself, MIT, and Harvard. These five U.S. patents are among the 12 U.S. patents with respect to which the PTAB had declared an interference with the pending U.S. patent application (U.S. Serial No. 13/842,859) that is owned by the University of California, the University of Vienna, and Emmanuelle Charpentier. The Suggestions of Interference that were filed by ToolGen are still pending and it is uncertain when and in what manner the USPTO will act on them.

Our owned and in-licensed patents and patent applications are, and may in the future become, subject to validity disputes in the USPTO and other foreign patent offices. For example, a request for *ex parte* re-examination was filed with the USPTO on February 16, 2016 against one patent that we have in-licensed from Broad, acting on behalf of itself and MIT (U.S. Patent No. 8,771,945), which was subject to the interference proceeding involving the University of California, the University of Vienna, and Emmanuelle Charpentier and referenced in the Suggestions of Interference filed by ToolGen. *Ex parte* re-examination is a procedure through which a third party can anonymously request the USPTO to re-examine a granted patent because the third party believes the granted patent may not be patentable over prior art in the form of a printed publication or another patent. Before the USPTO will re-examine a granted patent, the third party requestor must establish that the submitted prior art establishes a substantial and new question of patentability. If the USPTO determines there is a substantial and new question of patentability, it grants the re-examination request and re-examines the patent after giving the patent owner the option of filing an initial statement. The request for *ex parte* re-examination of U.S. Patent No. 8,771,945 was granted on May 9, 2016 thereby initiating a re-examination procedure between the USPTO and Broad, acting on behalf of itself and MIT. The third party requestor does not participate in the re-examination procedure after filing the request except that it has the option of responding if the patent owner chooses to file an initial statement. On May 12, 2016, the PTAB suspended the re-examination of U.S. Patent No. 8,771,945 noting that it has jurisdiction over any file that involves a patent involved in the interference. It is uncertain when the PTAB will lift the suspension, however the PTAB may do so in light of the CAFC's affirmance of

the PTAB's no interference-in-fact holding. If Broad is unsuccessful during the re-examination, U.S. Patent No. 8,771,945 may be revoked or narrowed, which could have a material adverse effect on the scope of our rights under such patent.

The 12 in-licensed U.S. patents and one in-licensed U.S. patent application that were the subject of the interference with the pending U.S. patent application (U.S. Serial No. 13/842,859) that is owned by the University of California, the University of Vienna, and Emmanuelle Charpentier (which includes the five in-licensed U.S. patents that are the subject of the Suggestions of Interference filed by ToolGen and the one in-licensed U.S. patent that is the subject of the re-examination) relate generally to the CRISPR/Cas9 system and its use in eukaryotic cells. The claims of the 12 in-licensed U.S. patents and one in-licensed U.S. patent application vary in scope and coverage and include claims that are directed to CRISPR/Cas9 systems that employ viral vectors for delivery, single guide RNAs, modified guide RNAs, *S. aureus* Cas9, or a Cas9 nickase and are relevant to our genome editing platform technology. The loss or narrowing in scope of one or more of these in-licensed patents could have a material adverse effect on the conduct of our business, financial condition, results of operations, and prospects.

In addition, a petition for post-grant review was filed by Benson Hill Biosystems, Inc. ("Benson Hill") with the PTAB on July 17, 2018 against one patent that we have in-licensed from Broad, acting on behalf of itself, MIT and Harvard (U.S. Patent No. 9,790,490). This patent relates generally to the CRISPR/Cpf1 system and its use in eukaryotic cells. Post-grant review is a procedure through which a third party can request the PTAB to review the patentability of one or more claims of a granted patent on any ground that could be raised in an invalidity defense. The post-grant review process begins with a third party filing a petition on or prior to the date that is nine months after the grant of the patent. The patent owner may file a preliminary response to the petition. A post-grant review may then be instituted by the PTAB but only upon a showing that, it is more likely than not that at least one claim challenged is unpatentable. If the proceeding is instituted and not dismissed, a final determination by the PTAB will be issued within one year (extendable for good cause by six months). Broad, acting on behalf of itself, MIT and Harvard, filed a preliminary response to the petition on October 24, 2018. The PTAB will notify the parties whether it is instituting post-grant review of U.S. Patent No. 9,790,490 based on Benson Hill's petition by January 24, 2019. If the PTAB institutes post-grant review and Broad is unsuccessful during the proceeding, this patent may be revoked or narrowed. The loss or narrowing in scope of one or more claims of this patent could have a material adverse effect on the conduct of our business, financial condition, results of operations, and prospects.

We or our licensors may also be subject to claims that former employees, collaborators, or other third parties have an interest in our owned or in-licensed patents or patent applications, or other intellectual property as an inventor or co-inventor. If we are unable to obtain an exclusive license to any such third party co-owners' interest in such patents or patent applications, such co-owners may be able to license their rights to other third parties, including our competitors. In addition, we may need the cooperation of any such co-owners to enforce any patents, including any patents that issue from such patent applications, against third parties, and such cooperation may not be provided to us. Any of the foregoing could have a material adverse effect on the conduct of our business, financial condition, results of operations, and prospects.

We or our licensors are subject to and may in the future become a party to similar proceedings or priority disputes in Europe or other foreign jurisdictions. On January 17, 2018, the European Patent Office Opposition Division (the "Opposition Division") revoked in the European Patent Office ("EPO") a European patent that we have in-licensed from Broad, acting on behalf of itself, MIT and Harvard (European Patent No. EP 2,771,468 B1). On January 18, 2018, Broad, acting on behalf of itself, MIT and Harvard filed a notice of appeal to the Boards of Appeal of the EPO for review of the Opposition Division's decision to revoke this patent. It is uncertain when or in what manner the Boards of Appeal will act on this appeal. The Opposition Division has also initiated opposition proceedings against seven other European patents that we have in-licensed from Broad, acting on behalf of itself, MIT and Harvard (European Patent Nos. EP 2,784,162 B1, EP 2,896,697 B1, EP 2,898,075 B1, EP 2,921,557 B1, EP 2,931,897 B1, EP 2,931,898 B1, and EP 3,009,511 B1), one European patent that we have in-licensed from Broad, acting on behalf of itself and MIT (European Patent No. EP 2,764,103 B1), and two European patents that we have in-licensed from Broad, acting on behalf of itself, MIT, Harvard and The Rockefeller University ("Rockefeller") (European Patent Nos. EP 2,825,654 B1 and EP 2,840,140 B1). The EPO opposition proceedings may involve issues including, but not limited to, procedural formalities related to filing the European patent application, priority, and the patentability of the involved claims. The

loss of priority for, or the loss of, these European patents could have a material adverse effect on the conduct of our business. One or more of the third parties that have filed oppositions against these European patents or other third parties may file future oppositions against other European patents that we in-license or own. For example, we are aware that a notice of opposition has been filed against one other European patent that we co-own and in-license from Broad, acting on behalf of itself, MIT and The University of Iowa Research Foundation (European Patent No. EP 3,066,201 B1). The deadline for filing oppositions against this European patent is December 7, 2018. There may be other oppositions against this European patent that have not yet been filed or made available to the public. In addition, we are aware that Intellia Therapeutics filed petitions in two actions in United States District Court seeking discovery of information, including inventorship information, related to issues in these pending EPO opposition proceedings. Both of these petitions were denied by the respective District Court and, in one of these two actions, Intellia Therapeutics filed a notice of appeal to the United States Court of Appeals. On June 20, 2018, the United States Court of Appeals affirmed the District Court's decision to deny the petition.

If we or our licensors are unsuccessful in any patent related disputes, including interference proceedings, patent oppositions, re-examinations, or other priority, inventorship, or validity disputes to which we or they are subject (including any of the proceedings discussed above), we may lose valuable intellectual property rights through the loss of one or more patents owned or licensed or our owned or licensed patent claims may be narrowed, invalidated, or held unenforceable. In addition, if we or our licensors are unsuccessful in any inventorship disputes to which we or they are subject, we may lose valuable intellectual property rights, such as exclusive ownership of, or the exclusive right to use, our owned or in-licensed patents. If we or our licensors are unsuccessful in any interference proceeding or other priority or inventorship dispute, we may be required to obtain and maintain licenses from third parties, including parties involved in any such interference proceedings or other priority or inventorship disputes. Such licenses may not be available on commercially reasonable terms or at all, or may be non-exclusive. If we are unable to obtain and maintain such licenses, we may need to cease the development, manufacture, and commercialization of one or more of the product candidates we may develop. The loss of exclusivity or the narrowing of our owned and licensed patent claims could limit our ability to stop others from using or commercializing similar or identical technology and products. Any of the foregoing could result in a material adverse effect on our business, financial condition, results of operations, or prospects. Even if we are successful in any interference proceeding or other priority, inventorship, or validity disputes, it could result in substantial costs and be a distraction to our management and other employees.

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

Filing, prosecuting, and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and the laws of foreign countries may not protect our rights to the same extent as the laws of the United States. In addition, our intellectual property license agreements may not always include worldwide rights. For example, certain U.S. patent applications licensed to us by Broad include The University of Tokyo ("Tokyo") and NIH as joint applicants. Broad has only granted a license to us with respect to its interests and to Tokyo's interests in these U.S. patent applications but not to any foreign equivalents thereof. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection or licenses but enforcement is not as strong as that in the United States. These products may compete with our products, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

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

commercially meaningful. Accordingly, our efforts to enforce our intellectual property and proprietary rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

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

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

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

If we fail to comply with our obligations in the agreements under which we license intellectual property rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

We have entered into license agreements with third parties and may need to obtain additional licenses from our existing licensors and others to advance our research or allow commercialization of product candidates we may develop. It is possible that we may be unable to obtain any additional licenses at a reasonable cost or on reasonable terms, if at all. In that event, we may be required to expend significant time and resources to redesign our technology, product candidates, or the methods for manufacturing them or to develop or license replacement technology, all of which may not be feasible on a technical or commercial basis. If we are unable to do so, we may be unable to develop or commercialize the affected product candidates, which could harm our business, financial condition, results of operations, and prospects significantly. We cannot provide any assurances that third party patents do not exist which might be enforced against our current technology, including CRISPR genome editing technology, manufacturing methods, product candidates, or future methods or products resulting in either an injunction prohibiting our manufacture or sales, or, with respect to our sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties, which could be significant.

In each of our license agreements, and we expect in our future agreements, we are responsible for bringing any actions against any third party for infringing on the patents we have licensed. 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. Disputes may arise regarding intellectual property subject to a licensing agreement, including:

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

- the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- the sublicensing of patent and other rights under our collaborative development relationships;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners; and
- the priority of invention of patented technology.

In addition, the agreements under which we currently license intellectual property or technology from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, including the amount, if any, that may become due and payable to our licensors in connection with sublicense income. If these events were to occur, they could have a material adverse effect on our business, financial condition, results of operations, and prospects. Moreover, 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.

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

We currently have rights to intellectual property, through licenses from third parties, to identify and develop product candidates. Many pharmaceutical companies, biotechnology companies, and academic institutions are competing with us in the field of genome editing technology and filing patent applications potentially relevant to our business. For example, we are aware of third party patents and patent applications that may be construed to cover our CRISPR technology and product candidates. In order to avoid infringing these third party patents, or patents that issue from these third party patent applications, we may find it necessary or prudent to obtain licenses from such third party intellectual property holders. We may also require licenses from third parties for certain non-CRISPR technologies including certain delivery methods that we are evaluating for use with product candidates we may develop. In addition, with respect to any patents we co-own with third parties, we may require licenses to such co-owners' interest in such patents. However, we may be unable to secure such licenses or otherwise acquire or in-license any compositions, methods of use, processes, or other intellectual property rights from third parties that we identify as necessary for our CRISPR technology and product candidates we may develop. The licensing or acquisition of third party intellectual property rights is a competitive area, and several more established companies may pursue strategies to license or acquire third party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. For example, certain delivery modes, including certain adeno-associated virus vectors and lipid nanoparticle technologies, we are evaluating for use are covered by patents held by third parties. If we are unable to successfully obtain rights to required third party intellectual property rights or maintain the existing intellectual property rights we have, we may have to abandon development of the relevant program or product candidate, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

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

Changes in either the patent laws or interpretation of the patent laws in the United States could increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. Assuming that other requirements for patentability are met, prior to March 2013, in the United States, the first to invent the claimed invention was entitled to the patent, while outside the United States, the first to file a patent application was entitled to the patent. After March 2013, under the Leahy-Smith America Invents Act (the "America Invents Act") enacted in September 2011, the United States transitioned to a first inventor to file system in which, assuming that other requirements for patentability are met, the first inventor to file a patent application will be entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. The America Invents Act also includes a number of significant changes that affect the way patent applications will be prosecuted and also may affect patent litigation. These include allowing third party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent by USPTO administered post-grant proceedings, including post-grant review, *inter partes* review, and derivation proceedings. The America Invents Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In addition, the patent positions of companies in the development and commercialization of biologics and pharmaceuticals are particularly uncertain. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the validity and enforceability of patents, once obtained. Depending on future actions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could have a material adverse effect on our existing patent portfolio and our ability to protect and enforce our intellectual property in the future.

Issued patents covering our technology and product candidates could be found invalid or unenforceable if challenged in court or before administrative bodies in the United States or abroad.

If we or one of our licensors were to initiate legal proceedings against a third party to enforce a patent covering a product candidate we may develop or our technology, including CRISPR genome editing technology, the defendant could counterclaim that such patent is invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. Third parties have raised challenges to the validity of certain of our in-licensed patent claims and may in the future raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, post-grant review, *inter partes* review, interference proceedings, derivation proceedings, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). For example, as discussed above, an interference was declared, and multiple Suggestions of Interference have been filed against certain of our in-licensed U.S. patents and patent applications, one of these U.S. patents is subject to a re-examination proceeding, opposition proceedings have been initiated against ten of our in-licensed European patents and additional interference, re-examination, post-grant review, opposition, and other intellectual property proceedings may be initiated in the future. For more information regarding these proceedings, see "Legal Proceedings" in Part II, Item 1 of this Quarterly Report on Form 10-Q. The opposition proceedings have so far resulted in the revocation of one of our in-licensed European patents. In view of certain arguments made by the third parties against this revoked patent and similar arguments made by the third parties against additional other in-licensed European patents under opposition, the opposition proceedings could potentially lead to the revocation of additional in-licensed European patents. These and other proceedings could result in the revocation or cancellation of, or amendment to our patents in such a way that they no longer cover our technology or platform, or any product candidates that we may develop. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which we or our licensing partners and the patent examiner were unaware during

prosecution. If a third party were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our technology or platform, or any product candidates that we may develop. Such a loss of patent protection would have a material adverse impact on our business, financial condition, results of operations, and prospects.

The intellectual property landscape around genome editing technology, including CRISPR, is highly dynamic, and third parties may initiate legal proceedings alleging that we are infringing, misappropriating, or otherwise violating their intellectual property rights, the outcome of which would be uncertain and could have a material adverse effect on the success of our business.

The field of genome editing, especially in the area of CRISPR technology, is still in its infancy, and no such products have reached the market. Due to the intense research and development that is taking place by several companies, including us and our competitors, in this field, the intellectual property landscape is in flux, and it may remain uncertain for the coming years. There may be significant intellectual property related litigation and proceedings relating to our owned and in-licensed, and other third party, intellectual property and proprietary rights in the future.

Our commercial success depends upon our ability and the ability of our collaborators to develop, manufacture, market, and sell any product candidates that we may develop and use our 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 are subject to and may in the future become party to, or threatened with, adversarial proceedings or litigation regarding intellectual property rights with respect to our technology and any product candidates we may develop, including interference proceedings, post-grant review, *inter partes* review, and derivation proceedings before the USPTO and similar proceedings in foreign jurisdictions such as oppositions before the EPO. Third parties may assert infringement claims against us based on existing patents or patents that may be granted in the future, regardless of their merit. We are aware of certain third party patents and patent applications in this landscape that may be asserted to encompass our CRISPR/Cas9 technology. In particular, we are aware of several separate families of U.S. patent applications and foreign counterparts which relate to CRISPR/Cas9 technology, where the earliest priority dates of each family pre-date the priority dates of our in-licensed patents and patent applications, including PCT Publication No. WO 2013/141680 (and its related U.S. Patent No. 9,637,739 and other related U.S. patent applications and foreign counterparts) filed by Vilnius University (which is reported to have exclusively licensed its rights to DuPont Pioneer, which is reported to have licensed certain rights to Caribou Biosciences, which is reported to have non-exclusively licensed certain rights to Intellia Therapeutics and CRISPR Therapeutics), WO 2013/176772 (and its related U.S. Patent No. 10,000,772 and 10,113,167 and other related U.S. patent applications and foreign counterparts including European Patent Nos. EP 2,800,811 B1 and EP 3,241,902 B1 which are being opposed by several parties) filed by the University of California, the University of Vienna (both of which are reported to have exclusively licensed their rights to Caribou Biosciences, which is reported to have exclusively licensed certain rights to Intellia Therapeutics), and Emmanuelle Charpentier (who is reported to have exclusively licensed her rights to CRISPR Therapeutics, ERS Genomics and TRACR Hematology), WO 2014/065596 (and its related U.S. patent applications and foreign counterparts including European Patent No. EP 2,912,175 B1 which is being opposed by several parties) filed by ToolGen, and WO 2014/089290 (and its related U.S. patent applications and foreign counterparts including European Patent No. EP 3,138,910 B1, which is being opposed by several parties) filed by Sigma-Aldrich Co. LLC. Each of these patent families are owned by a different third party and contain claims that may be construed to cover components and uses of CRISPR/Cas9 technology. If we are not able to obtain or maintain a license on commercially reasonable terms to any third-party patents that cover our product candidates or activities, such third parties could potentially assert infringement claims against us, which could have a material adverse effect on the conduct of our business.

Even if we believe third-party intellectual property claims are without merit, there is no assurance that a court would find in our favor on questions of infringement, validity, enforceability, or priority. A court of competent jurisdiction could hold that these third party patents are valid, enforceable, and infringed, which could materially and adversely affect our ability to commercialize any product candidates we may develop and any other product candidates or technologies covered by the asserted third party patents. In order to successfully challenge the validity of any such U.S. patent in federal court, we would need to overcome a presumption of validity. As this burden is a high one requiring us to present clear and convincing evidence as to the invalidity of any such U.S. patent claim, there is no assurance that a

court of competent jurisdiction would invalidate the claims of any such U.S. patent. If we are found to infringe a third party's intellectual property rights, and we are unsuccessful in demonstrating that such patents are invalid or unenforceable, we could be required to obtain a license from such third party to continue developing, manufacturing, and marketing any product candidates we may develop and our technology. 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 the infringing technology or product candidates. In addition, 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. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar material adverse effect on our business, financial condition, results of operations, and prospects.

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

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

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

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

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

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions, or other interim proceedings or developments, and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing, or distribution activities. We

may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

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

In addition to seeking patents for some of our technology and product candidates, we also rely on trade secrets and confidentiality agreements to protect our unpatented know-how, technology, and other proprietary information and to maintain our competitive position. With respect to our technology platform, we consider trade secrets and know-how to be one of our primary sources of intellectual property. Trade secrets and know-how can be difficult to protect. In particular, we anticipate that with respect to our technology platform, these trade secrets and know-how will over time be disseminated within the industry through independent development, the publication of journal articles describing the methodology, and the movement of personnel from academic to industry scientific positions.

We seek to protect these trade secrets and other proprietary technology, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our employees, corporate collaborators, outside scientific collaborators, CROs, contract manufacturers, consultants, advisors, and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants. We cannot guarantee that we have entered into such agreements with each party that may have or have had access to our trade secrets or proprietary technology and processes. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive, and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor or other third party, we would have no right to prevent them from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor or other third party, our competitive position would be materially and adversely harmed.

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

Depending upon the timing, duration and specifics of any FDA marketing approval of any product candidates we may develop, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Action of 1984 (the “Hatch-Waxman Amendments”). The Hatch-Waxman Amendments permit a patent extension term of up to five years as compensation for patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, only one patent may be extended and only those claims covering the approved drug, a method for using it, or a method for manufacturing it may be extended. However, we may not be granted an extension because of, for example, failing to exercise due diligence during the testing phase or regulatory review process, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents, or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our business, financial condition, results of operations, and prospects could be materially harmed.

Intellectual property rights do not necessarily address all potential threats.

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

- others may be able to make gene therapy products that are similar to any product candidates we may develop or utilize similar gene therapy technology but that are not covered by the claims of the patents that we license or may own in the future;
- we, or our license partners or current or future collaborators, might not have been the first to make the inventions covered by the issued patent or pending patent application that we license or may own in the future;
- we, or our license partners or current or future collaborators, might not have been the first to file patent applications covering certain of our or their inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our owned or licensed intellectual property rights;
- it is possible that our pending licensed patent applications or those that we may own in the future will not lead to issued patents;
- issued patents that we hold rights to may be held invalid or unenforceable, including as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;
- the patents of others may harm our business; and
- we may choose not to file a patent in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property.

Should any of these events occur, they could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Risks Related to Regulatory Approval and Other Legal Compliance Matters

Even if we complete the necessary preclinical studies and clinical trials, the marketing approval process is expensive, time-consuming, and uncertain and may prevent us from obtaining approvals for the commercialization of any product candidates we may develop. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals, we will not be able to commercialize, or will be delayed in commercializing, product candidates we may develop, and our ability to generate revenue will be materially impaired.

Any product candidates we may develop and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale, and distribution, are subject to comprehensive regulation by the FDA and other regulatory authorities in the United States and by comparable authorities in other countries. Failure to obtain marketing approval for a product candidate will prevent us from commercializing the product candidate in a given jurisdiction. We

have not received approval to market any product candidates from regulatory authorities in any jurisdiction. We have only limited experience in filing and supporting the applications necessary to gain marketing approvals and expect to rely on third-party CROs to assist us in this process. Securing regulatory approval requires the submission of extensive preclinical and clinical data and supporting information to the various regulatory authorities for each therapeutic indication to establish the biologic product candidate's safety, purity, and potency. Securing regulatory approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Any product candidates we develop may not be effective, may be only moderately effective, or may prove to have undesirable or unintended side effects, toxicities, or other characteristics that may preclude our obtaining marketing approval or prevent or limit commercial use.

The process of obtaining marketing approvals, both in the United States and abroad, is expensive, may take many years if additional clinical trials are required, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity, and novelty of the product candidates involved. Changes in marketing approval policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. The FDA and comparable authorities in other countries have substantial discretion in the approval process and may refuse to accept any application or may decide that our data is insufficient for approval and require additional preclinical, clinical, or other studies. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit, or prevent marketing approval of a product candidate. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved medicine not commercially viable.

If we experience delays in obtaining approval or if we fail to obtain approval of any product candidates we may develop, the commercial prospects for those product candidates may be harmed, and our ability to generate revenues will be materially impaired.

Failure to obtain marketing approval in foreign jurisdictions would prevent any product candidates we may develop from being marketed in such jurisdictions, which, in turn, would materially impair our ability to generate revenue.

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

Additionally, on June 23, 2016, the electorate in the United Kingdom voted in favor of leaving the European Union, commonly referred to as Brexit. On March 29, 2017, the country formally notified the European Union of its intention to withdraw pursuant to Article 50 of the Lisbon Treaty. Since a significant proportion of the regulatory framework in the United Kingdom is derived from European Union directives and regulations, the referendum could materially impact the regulatory regime with respect to the approval of our product candidates in the United Kingdom or the European Union. Any delay in obtaining, or an inability to obtain, any marketing approvals, as a result of Brexit or otherwise, would prevent us from commercializing our product candidates in the United Kingdom and/or the European Union and restrict our ability to generate revenue and achieve and sustain profitability. If any of these outcomes occur, we may be forced to restrict or delay efforts to seek regulatory approval in the United Kingdom and/or European Union for our product candidates, which could significantly and materially harm our business.

Even if we, or any collaborators we may have, obtain marketing approvals for any product candidates we develop, the terms of approvals and ongoing regulation of our products could require the substantial expenditure of resources and may limit how we, or they, manufacture and market our products, which could materially impair our ability to generate revenue.

Any product candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising, and promotional activities for such medicine, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP requirements relating to quality control, quality assurance and corresponding maintenance of records and documents, and requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the medicine may be marketed or to the conditions of approval, or contain requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the medicine.

Accordingly, assuming we, or any collaborators we may have, receive marketing approval for one or more product candidates we develop, we, and such collaborators, and our and their contract manufacturers will continue to expend time, money, and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance, and quality control. If we and such collaborators are not able to comply with post-approval regulatory requirements, we and such collaborators could have the marketing approvals for our products withdrawn by regulatory authorities and our, or such collaborators', ability to market any future products could be limited, which could adversely affect our ability to achieve or sustain profitability. Further, the cost of compliance with post-approval regulations may have a negative effect on our business, operating results, financial condition, and prospects.

Any product candidate for which we obtain marketing approval could be subject to restrictions or withdrawal from the market, and we may be subject to substantial penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our medicines, when and if any of them are approved.

The FDA and other regulatory agencies closely regulate the post-approval marketing and promotion of medicines to ensure that they are marketed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA and other regulatory agencies impose stringent restrictions on manufacturers' communications regarding off-label use, and if we do not market our medicines for their approved indications, we may be subject to enforcement action for off-label marketing by the FDA and other federal and state enforcement agencies, including the Department of Justice. Violation of the Federal Food, Product, and Cosmetic Act and other statutes, including the False Claims Act, relating to the promotion and advertising of prescription products may also lead to investigations or allegations of violations of federal and state health care fraud and abuse laws and state consumer protection laws.

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

- restrictions on such medicines, manufacturers, or manufacturing processes;
- restrictions on the labeling or marketing of a medicine;
- restrictions on the distribution or use of a medicine;
- requirements to conduct post-marketing clinical trials;
- receipt of warning or untitled letters;
- withdrawal of the medicines from the market;

- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of medicines;
- fines, restitution, or disgorgement of profits or revenue;
- suspension or withdrawal of marketing approvals;
- suspension of any ongoing clinical trials;
- refusal to permit the import or export of our medicines;
- product seizure; and
- injunctions or the imposition of civil or criminal penalties.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. The occurrence of any event or penalty described above may inhibit our ability to commercialize any product candidates we may develop and adversely affect our business, financial condition, results of operations, and prospects.

Our relationships with healthcare providers, physicians, and third-party payors will be subject to applicable anti-kickback, fraud and abuse, and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, and diminished profits and future earnings.

Healthcare providers, physicians, and third-party payors play a primary role in the recommendation and prescription of any product candidates that we may develop for which we obtain marketing approval. Our future arrangements with third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell, and distribute our medicines for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations include the following:

- the federal healthcare anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving, or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order, or recommendation of, any good or service, for which payment may be made under federal and state healthcare programs such as Medicare and Medicaid;
- the federal False Claims Act imposes criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment or approval from Medicare, Medicaid, or other government payors that are false or fraudulent or making a false statement to avoid, decrease, or conceal an obligation to pay money to the federal government, with potential liability including mandatory treble damages and significant per-claim penalties, currently set at $5,500 to $11,000 per false claim;
- the federal Health Insurance Portability and Accountability Act of 1996, as further amended by the Health Information Technology for Economic and Clinical Health Act, which imposes certain requirements, including mandatory contractual terms, with respect to safeguarding the privacy, security, and transmission of individually identifiable health information without appropriate authorization by entities subject to the rule, such as health plans, health care clearinghouses, and health care providers;

- the federal false statements statute, which prohibits knowingly and willfully falsifying, concealing, or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items, or services;

- the federal transparency requirements under the federal Physician Payment Sunshine Act, which requires manufacturers of drugs, devices, biologics, and medical supplies to report to the Department of Health and Human Services information related to payments and other transfers of value to physicians and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members and applicable group purchasing organizations; and

- analogous state laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, and certain state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures.

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge under one or more of such laws. 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 penalties, including civil and criminal penalties, damages, fines, exclusion from participation in government health care programs, such as Medicare and Medicaid, imprisonment, and the curtailment or restructuring of our operations, any of which could adversely affect our business, financial condition, results of operations, and prospects.

The provision of benefits or advantages to physicians to induce or encourage the prescription, recommendation, endorsement, purchase, supply, order, or use of medicinal products is prohibited in the European Union. The provision of benefits or advantages to physicians is also governed by the national anti-bribery laws of European Union Member States, such as the UK Bribery Act 2010. Infringement of these laws could result in substantial fines and imprisonment.

Payments made to physicians in certain European Union Member States must be publicly disclosed. Moreover, agreements with physicians often must be the subject of prior notification and approval by the physician's employer, his or her competent professional organization, and/or the regulatory authorities of the individual European Union Member States. These requirements are provided in the national laws, industry codes, or professional codes of conduct applicable in the European Union Member States. Failure to comply with these requirements could result in reputational risk, public reprimands, administrative penalties, fines, or imprisonment.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations, or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal, and administrative penalties, damages, fines, exclusion from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to be not in compliance with applicable laws, they may be subject to criminal, civil, or administrative sanctions, including exclusions from government funded healthcare programs. Liabilities they incur pursuant to these laws could result in significant costs or an interruption in operations, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

The efforts of the Administration to pursue regulatory reform may limit the FDA's ability to engage in oversight and implementation activities in the normal course, and that could negatively impact our business.

The Trump Administration has taken several executive actions, including the issuance of a number of executive orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine regulatory and oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. On January 30, 2017, President Trump issued an executive order, applicable to all executive agencies, including the FDA, that requires that for each notice of proposed rulemaking or final regulation to be issued in fiscal year 2017, the agency shall identify at least two existing regulations to be repealed, unless prohibited by law. These requirements are referred to as the "two-for-one" provisions. This executive order includes a budget neutrality provision that requires the total incremental cost of all new regulations in the 2017 fiscal year, including repealed regulations, to be no greater than zero, except in limited circumstances. For fiscal years 2018 and beyond, the executive order requires agencies to identify regulations to offset any incremental cost of a new regulation. In interim guidance issued by the Office of Information and Regulatory Affairs within the Office of Management and on February 2, 2017, the administration indicates that the "two-for-one" provisions may apply not only to agency regulations, but also to significant agency guidance documents. It is difficult to predict how these requirements will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

Recently enacted and future legislation may increase the difficulty and cost for us and any future collaborators to obtain marketing approval of and commercialize our product candidates and affect the prices we, or they, may obtain.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could, among other things, prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability, or the ability of any future collaborators, to profitably sell any products for which we, or they, obtain marketing approval. We expect that current laws, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we, or any future collaborators, may receive for any approved products.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (the "Medicare Modernization Act"), changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for any approved products. While the Medicare Modernization Act applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates. Therefore, any reduction in reimbursement that results from the Medicare Modernization Act may result in a similar reduction in payments from private payors.

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act (the "PPACA"), which became law in 2010, contains provisions of importance to our business, including, without limitation, our ability to commercialize and the prices we may obtain for any of our product candidates and that are approved for sale, the following:

- an annual, non-deductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program;

- expansion of federal healthcare fraud and abuse laws, including the False Claims Act and the Anti-Kickback Statute, new government investigative powers and enhanced penalties for noncompliance;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices;
- extension of manufacturers' Medicaid rebate liability;
- expansion of eligibility criteria for Medicaid programs;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program new requirements to report financial arrangements with physicians and teaching hospitals;
- a new requirement to annually report drug samples that manufacturers and distributors provide to physicians; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. These changes included aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect in April 2013 and will remain in effect through 2024 unless additional Congressional action is taken. The American Taxpayer Relief Act of 2012, among other things, reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws may result in additional reductions in Medicare and other healthcare funding and otherwise affect the prices we may obtain for any of our product candidates for which we may obtain regulatory approval or the frequency with which any such product candidate is prescribed or used.

We expect that these healthcare reforms, as well as other healthcare reform measures that may be adopted in the future, may result in additional reductions in Medicare and other healthcare funding, more rigorous coverage criteria, new payment methodologies and additional downward pressure on the price that we receive for any approved product and/or the level of reimbursement physicians receive for administering any approved product we might bring to market. Reductions in reimbursement levels may negatively impact the prices we receive or the frequency with which our potential products are prescribed or administered. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors.

With the new Trump Administration and Congress, there may be additional legislative changes, including potentially repeal and replacement of certain provisions of the PPACA. 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" of the PPACA. 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 13 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 PPACA. Although none of these measures has been enacted by Congress to date, Congress may consider other legislation to repeal and replace elements of the PPACA. The Congress will likely consider other legislation to replace elements of the PPACA, during the next Congressional session.

The Trump Administration has also taken executive actions to undermine or delay implementation of the PPACA. In January 2017, President Trump signed an Executive Order directing federal agencies with authorities and

responsibilities under the PPACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the PPACA 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 PPACA exchanges. At the same time, the Administration announced that it will discontinue the payment of cost-sharing reduction ("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 PPACA. A bipartisan bill to appropriate funds for CSR payments was introduced in the Senate, but the future of that bill is uncertain.

The costs of prescription pharmaceuticals in the United States has also been the subject of considerable discussion in the United States, and members of Congress and the Administration have stated that they will address such costs through new legislative and administrative measures. To date, there have been several recent U.S. congressional inquiries and proposed state and federal legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the costs of drugs under Medicare and reform government program reimbursement methodologies for drug products. The pricing of prescription pharmaceuticals is also subject to governmental control outside the United States. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost effectiveness of our product candidates to other available therapies. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our ability to generate revenues and become profitable could be impaired.

Fast track designation by the FDA may not actually lead to a faster development or regulatory review or approval process, and does not assure FDA approval of our product candidates.

If a product candidate is intended for the treatment of a serious or life threatening condition and the product candidate demonstrates the potential to address unmet medical need for this condition, the sponsor may apply for FDA fast track designation. However, a fast track designation does not ensure that the product candidate will receive marketing approval or that approval will be granted within any particular timeframe. As a result, while we may seek and receive fast track designation for our product candidates, we may not experience a faster development process, review or approval compared to conventional FDA procedures. In addition, the FDA may withdraw fast track designation if it believes that the designation is no longer supported by data from our clinical development program. Fast track designation alone does not guarantee qualification for the FDA's priority review procedures.

Priority review designation by the FDA may not lead to a faster regulatory review or approval process and, in any event, does not assure FDA approval of our product candidates.

If the FDA determines that a product candidate offers major advances in treatment or provides a treatment where no adequate therapy exists, the FDA may designate the product candidate for priority review. A priority review designation means that the goal for the FDA to review an application is six months, rather than the standard review period of ten months. We may request priority review for certain of our product candidates. The FDA has broad discretion with respect to whether or not to grant priority review status to a product candidate, so even if we believe a particular product candidate is eligible for such designation or status, the FDA may decide not to grant it. Moreover, a priority review designation does not necessarily mean a faster regulatory review process or necessarily confer any advantage with respect to approval compared to conventional FDA procedures. Receiving priority review from the FDA does not guarantee approval within the six-month review cycle or thereafter.

We may not be able to obtain orphan drug exclusivity for one or more of our product candidates, and even if we do, that exclusivity may not prevent the FDA or the EMA from approving other competing products.

Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug or biologic intended to treat a rare disease or condition. A similar regulatory scheme governs approval of orphan products by the EMA in the European Union. Generally, if a product candidate with an orphan drug designation subsequently receives

the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA or the EMA from approving another marketing application for the same product for the same therapeutic indication for that time period. The applicable period is seven years in the United States and ten years in the European Union. The exclusivity period in the European Union can be reduced to six years if a product no longer meets the criteria for orphan drug designation, in particular if the product is sufficiently profitable so that market exclusivity is no longer justified.

In order for the FDA to grant orphan drug exclusivity to one of our products, the agency must find that the product is indicated for the treatment of a condition or disease with a patient population of fewer than 200,000 individuals annually in the United States. The FDA may conclude that the condition or disease for which we seek orphan drug exclusivity does not meet this standard. Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different products can be approved for the same condition. In addition, even after an orphan drug is approved, the FDA can subsequently approve the same product for the same condition if the FDA concludes that the later product is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care. Orphan drug exclusivity may also be lost if the FDA or EMA determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the product to meet the needs of the patients with the rare disease or condition.

On August 3, 2017, the Congress passed the FDA Reauthorization Act of 2017 (“FDARA”). FDARA, among other things, codified the FDA’s pre-existing regulatory interpretation, to require that a drug sponsor demonstrate the clinical superiority of an orphan drug that is otherwise the same as a previously approved drug for the same rare disease in order to receive orphan drug exclusivity. The new legislation reverses prior precedent holding that the Orphan Drug Act unambiguously requires that the FDA recognize the orphan exclusivity period regardless of a showing of clinical superiority. The FDA may further reevaluate the Orphan Drug Act and its regulations and policies. We do not know if, when, or how the FDA may change the orphan drug regulations and policies in the future, and it is uncertain how any changes might affect our business. Depending on what changes the FDA may make to its orphan drug regulations and policies, our business could be adversely impacted.

Our employees, principal investigators, consultants, and commercial partners 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 of fraud or other misconduct by our employees, consultants, and commercial partners, and, if we commence clinical trials, our principal investigators. Misconduct by these parties could include intentional failures to comply with FDA regulations or the regulations applicable in the European Union and other jurisdictions, provide accurate information to the FDA, the European Commission, and other regulatory authorities, comply with healthcare fraud and abuse laws and regulations in the United States and abroad, report financial information or data accurately, or disclose unauthorized activities to us. 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. These laws and regulations restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs, and other business arrangements. Such misconduct also could involve the improper use of information obtained in the course of clinical trials or interactions with the FDA or other regulatory authorities, which could result in regulatory sanctions and cause serious harm to our reputation. We have adopted a code of conduct applicable to all of our employees, but it is not always possible to identify and deter employee 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 government investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, financial condition, results of operations, and prospects, including the imposition of significant fines or other sanctions.

Laws and regulations governing any international operations we may have in the future may preclude us from developing, manufacturing and selling certain product candidates outside of the United States and require us to develop and implement costly compliance programs.

We are subject to numerous laws and regulations in each jurisdiction outside the United States in which we operate. The creation, implementation and maintenance of international business practices compliance programs is costly and such programs are difficult to enforce, particularly where reliance on third parties is required.

The Foreign Corrupt Practices Act ("FCPA") prohibits any U.S. individual or business from paying, offering, authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with certain accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations. The anti-bribery provisions of the FCPA are enforced primarily by the Department of Justice. The SEC is involved with enforcement of the books and records provisions of the FCPA.

Compliance with the FCPA is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, the FCPA presents particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees are considered foreign officials. Certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to FCPA enforcement actions.

Various laws, regulations and executive orders also restrict the use and dissemination outside of the United States, or the sharing with certain non-U.S. nationals, of information classified for national security purposes, as well as certain products and technical data relating to those products. Our expansion outside of the United States has required, and will continue to require, us to dedicate additional resources to comply with these laws, and these laws may preclude us from developing, manufacturing, or selling certain drugs and drug candidates outside of the United States, which could limit our growth potential and increase our development costs. The failure to comply with laws governing international business practices may result in substantial penalties, including suspension or debarment from government contracting. Violation of the FCPA can result in significant civil and criminal penalties. Indictment alone under the FCPA can lead to suspension of the right to do business with the U.S. government until the pending claims are resolved. Conviction of a violation of the FCPA can result in long-term disqualification as a government contractor. The termination of a government contract or relationship as a result of our failure to satisfy any of our obligations under laws governing international business practices would have a negative impact on our operations and harm our reputation and ability to procure government contracts. The SEC also may suspend or bar issuers from trading securities on U.S. exchanges for violations of the FCPA's accounting provisions.

Risks Related to Employee Matters, Managing Growth and Information Technology

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

We are highly dependent on Katrine S. Bosley, our Chief Executive Officer, as well as the other principal members of our management and scientific teams. Ms. Bosley is employed "at will," meaning we or she may terminate the employment relationship at any time. We do not maintain "key person" insurance for any of our executives or other employees. The loss of the services of any of these persons could impede the achievement of our research, development, and commercialization objectives.

Recruiting and retaining qualified scientific, clinical, manufacturing, and sales and marketing personnel will also be critical to our success. We may not be able to attract and retain these personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we

rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. The inability to recruit, or loss of services of certain executives, key employees, consultants, or advisors, may impede the progress of our research, development, and commercialization objectives and have a material adverse effect on our business, financial condition, results of operations, and prospects.

We have expanded and expect to further expand our development, regulatory, clinical, manufacturing and future sales and marketing capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

We expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of drug development, regulatory affairs, clinical development, manufacturing, and sales and marketing. For example, our total number of employees grew from 55 as of December 31, 2015 to 112 as of January 1, 2018. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational, and financial systems, expand our facilities, and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expected expansion of our operations or recruit and train additional qualified personnel. Moreover, the expected physical expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

Security breaches and other disruptions to our information technology structure could compromise our information, disrupt our business and expose us to liability, which would cause our business and reputation to suffer.

In the ordinary course of our business, we collect, process and store sensitive data, including intellectual property, as well as our proprietary business information and that of our suppliers and business partners, employee data, and we expect to collect personally identifiable information of clinical trial participants when we begin clinical trials. We also rely to a large extent on information technology systems to operate our business. We have outsourced elements of our confidential information processing and information technology structure, and as a result, we are managing independent vendor relationships with third parties who may or could have access to our confidential information. Similarly, our business partners and other third-party providers possess certain of our sensitive data. The secure maintenance of this information is important to our operations and business strategy. Despite our security measures, our information technology infrastructure (and those of our partners, vendors and third-party providers) may be vulnerable to attacks by hackers or breached due to employee error, malfeasance or other disruptions. We, our partners, vendors, and other third-party providers could be susceptible to third party attacks on our, and their, information security systems, which attacks are of ever-increasing levels of sophistication and are made by groups and individuals with a wide range of motives and expertise, including organized criminal groups, hacktivists, nation states and others. While we have invested in information technology security measures and the protection of confidential information, there can be no assurance that our efforts will prevent service interruptions or security breaches. Any such interruptions or breach may substantially impair our ability to operate our business and would compromise our, and their, networks and the information stored could be accessed, publicly disclosed, lost, or stolen. Any such access, disclosure, or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, disrupt our operations, and damage our reputation, any of which could adversely affect our business.

Risks Related to Our Common Stock

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

Our shares of common stock began trading on The Nasdaq Global Select Market in February 2016. Given the limited trading history of our common stock, there is a risk that an active trading market for our shares will not be sustained, which could put downward pressure on the market price of our common stock and thereby affect the ability of our stockholders to sell their shares.

The market price of our common stock may be volatile, which could result in substantial losses for our stockholders.

Our stock price has been, and is likely to remain, volatile. Some of the factors that may cause the market price of our common stock to fluctuate include:

- the success of existing or new competitive products or technologies;
- the timing and results of preclinical and clinical studies for the LCA10 program and any product candidates that we may develop;
- commencement or termination of collaborations for our product development and research programs;
- failure or discontinuation of any of our product development and research programs;
- results of preclinical studies, clinical trials, or regulatory approvals of product candidates of our competitors, or announcements about new research programs or product candidates of our competitors;
- developments or changing views regarding the use of genomic medicines, including those that involve genome editing;
- 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 any of our research programs, clinical development programs, or product candidates that we may develop;
- the results of our efforts to develop additional product candidates or products;
- actual or anticipated changes in estimates as to financial results, development timelines, or recommendations by securities analysts;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders, or other stockholders;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts, if any, that cover our stock;
- 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.

In recent years, the stock market in general, and the market for pharmaceutical and biotechnology companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to

changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. Following periods of such volatility in the market price of a company's securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management's attention and resources from our business.

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 and trading volume could decline.

The trading market for our common stock depends, 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 or fail to regularly publish reports on us, we could lose visibility in the market for our stock, which in turn could cause our stock price to decline.

A portion of our total outstanding shares may be sold into the market in the near future, which could cause the market price of our common stock to decline significantly, even if our business is doing well.

Sales of a significant number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock.

We have registered substantially all shares of common stock that we may issue under our equity compensation plans or that are issuable upon exercise of outstanding options. These shares can be freely sold in the public market upon issuance and once vested, subject to volume limitations applicable to affiliates. In addition, under the terms of certain of our license agreements and certain promissory notes that we may issue in the future in connection with these license agreements, we may elect to issue shares of our common stock in satisfaction of specified payment obligations of ours, which shares may be subject to rights requiring us to register such shares under the Securities Act of 1933, as amended (the "Securities Act"). Such an election by us could result in the issuance of a substantial number of shares and upon registration under the Securities Act these shares would be able to be freely sold in the public market, subject to volume limitations applicable to affiliates. If any of the additional shares described above are sold, or if it is perceived that they will be sold, in the public market, the market price of our common stock could decline.

In addition, certain of our employees, executive officers, directors, and affiliated stockholders have entered or may enter into Rule 10b5-1 plans providing for sales of shares of our common stock from time to time. Under a Rule 10b5-1 plan, a broker executes trades pursuant to parameters established by the employee, director or officer when entering into the plan, without further direction from the employee, officer, director, or affiliated stockholder. A Rule 10b5-1 plan may be amended or terminated in some circumstances. Our employees, executive officers, directors, and affiliated stockholders also may buy or sell additional shares outside of a Rule 10b5-1 plan when they are not in possession of material, nonpublic information.

We are an "emerging growth company," and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act") and will remain an emerging growth company until December 31, 2018. For so long as we remain an emerging growth company, we are permitted and plan to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002 ("SOX Section 404") not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the consolidated financial statements, reduced disclosure obligations regarding executive compensation, and exemptions from the requirements of holding a nonbinding advisory vote on

executive compensation and stockholder approval of any golden parachute payments not previously approved. As a result, the information we provide stockholders will be different than the information that is available with respect to other public companies. In our proxy statement for our 2018 Annual Meeting of Stockholders that we filed with the SEC on April 27, 2018, we did not include all of the executive compensation related information that would be required if we were not an emerging growth company. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and our stock price may be more volatile.

We incur increased costs as a result of operating as a public company, and our management is required to devote substantial time to new compliance initiatives and corporate governance practices.

As a public company, and particularly after we are no longer an "emerging growth company," we will incur significant legal, accounting, and other expenses that we did not incur as a private company. The Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The Nasdaq Global Select Market, and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. We have had to hire additional accounting, finance, and other personnel in connection with our becoming, and our efforts to comply with the requirements of being, a public company, and our management and other personnel devote a substantial amount of time towards maintaining compliance with these requirements. These requirements increase our legal and financial compliance costs and make some activities more time-consuming and costly. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Pursuant to SOX Section 404, we are required to furnish a report by our management on our internal control over financial reporting. Additionally, once we cease to be an emerging growth company in 2019, we will be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with SOX Section 404 within the prescribed period, we are engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants, adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented, and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that neither we nor our independent registered public accounting firm will be able to conclude, within the prescribed timeframe or at all, that our internal control over financial reporting is effective as required by SOX Section 404. If we identify one or more material weaknesses, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our consolidated financial statements.

We have broad discretion in the use of our cash reserves and may not use them effectively.

Our management has broad discretion to use our cash reserves and could use our cash reserves in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline, and delay the development of our product candidates. Pending their use, we may invest our cash reserves in a manner that does not produce income or that loses value.

We do not expect to pay any dividends for the foreseeable future. Accordingly, stockholders must rely on capital appreciation, if any, for any return on their investments.

We have never declared or paid cash dividends on our common stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. In addition, the terms of any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be stockholders' sole source of gain for the foreseeable future.

Provisions in our restated certificate of incorporation and amended and restated bylaws or Delaware law might discourage, delay, or prevent a change in control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Provisions in our restated certificate of incorporation and amended and restated bylaws or Delaware law may discourage, delay, or prevent a merger, acquisition, or other change in control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. These provisions include:

- limitations on the removal of directors;
- a classified board of directors so that not all members of our board of directors are elected at one time;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to act by written consent or to call special meetings;
- the requirement that at least 75% of the votes cast by all our stockholders approve the amendment or repeal of certain provisions of our amended and restated bylaws or restated certificate of incorporation;
- the ability of our board of directors to make, alter, or repeal our amended and restated bylaws; and
- the ability of our board of directors to designate the terms of and issue new series of preferred stock without stockholder approval, which could be used to institute a rights plan, or a poison pill, that would work to dilute the stock ownership of a potential hostile acquirer, likely preventing acquisitions that have not been approved by our board of directors.

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

The existence of the foregoing provisions could deter potential acquirers of our company, thereby reducing the likelihood that our stockholders could receive a premium for their shares of common stock in an acquisition.

Our restated certificate of incorporation designates the state courts in the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal court for the District of Delaware, as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could discourage lawsuits against the company and our directors and officers.

Our restated certificate of incorporation provides that, unless our board of directors otherwise determines, the state courts in the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal court for the District of Delaware, will be the sole and exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to our company or our stockholders, any action asserting a claim against us or any of our directors or officers arising pursuant to any provision of the General Corporation Law of the State of Delaware or our restated certificate of incorporation or amended and restated bylaws, or any action asserting a claim against us or any of our directors or officers governed by the internal affairs doctrine. This exclusive forum provision may limit the ability of our stockholders to bring a claim in a judicial forum that such stockholders find favorable for disputes with us or our directors or officers, which may discourage such lawsuits against us and our directors and officers.

Item 6. Exhibits

Exhibit Index

Exhibit Number	Description of Exhibit
10.1†	License and Collaboration Agreement, dated May 26, 2015, between the Registrant and Juno Therapeutics, Inc.
31.1	Rule 13a-14(a) Certification of Principal Executive Officer
31.2	Rule 13a-14(a) Certification of Principal Financial Officer
32.1	Certification of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. §1350
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

† Confidential treatment has been granted as to certain portions, which portions in each case have been omitted and separately filed with the Securities and Exchange Commission.

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.

EDITAS MEDICINE, INC.

Dated: November 8, 2018

By: /s/ Andrew A. F. Hack
Andrew A. F. Hack M.D., Ph.D.
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 10.1

EXECUTION VERSION

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Double asterisks denote omissions.

COLLABORATION AND LICENSE AGREEMENT

This COLLABORATION AND LICENSE AGREEMENT (this "Agreement"), effective as of May 26, 2015 (the "Effective Date"), is made by and between Editas Medicine, Inc., a Delaware corporation, having a principal place of business at 300 Third Street, First Floor, Cambridge, MA 02142 ("Editas"), and Juno Therapeutics, Inc., a Delaware corporation, having a place of business at 307 Westlake Avenue North, Suite 300, Seattle, WA 98109 ("Juno").

BACKGROUND

A. Editas has skills, expertise and proprietary technology regarding gene editing technology. Juno has skills, expertise and proprietary technology regarding T-cell immunotherapy technology.

B. Juno and Editas desire to enter a collaboration wherein Juno shall select certain gene targets and Editas shall apply its gene editing technology, with the goal of developing an engineered T-cell that would utilize or incorporate the results of such collaboration.

NOW, THEREFORE, for and in consideration of the covenants, conditions and undertakings hereinafter set forth, it is agreed by and between the Parties as follows:

ARTICLE 1
DEFINITIONS

As used herein, the following terms shall have the meanings set forth below:

1.1 "Affiliate" means any corporation or other entity, whether *de jure* or *de facto*, which is directly or indirectly controlling, controlled by or under common control of a Party for so long as such control exists. For the purposes of this Section, "control" means the direct or indirect ownership of more than fifty percent (50%) of the outstanding shares or other voting rights of the subject entity having the power to vote on or direct the affairs of the entity, or if not meeting the preceding, the maximum voting right that may be held by the particular Party under the laws of the country where such entity exists.

1.2 "[**] Engineered T-Cell" means an Engineered T-Cell that has been genetically modified to [**].

1.3 "[**] Engineered T-Cell Product" means any pharmaceutical product incorporating as an active ingredient the [**] Engineered T-Cell that is generated or developed under the Research Program and designated by Juno pursuant to Section 2.7(d) or any [**].

1.4 "[**] Engineered T-Cell Research" means those elements of the Research Program related to the research and development of [**] Engineered T-Cells.

1.5 "BLA" means a biologics license application, or similar application, submitted to the applicable Competent Authority in a jurisdiction in the Territory.

1.6 "Business Day" means a day that is not a Saturday, Sunday or a day on which banking institutions in Seattle, Washington or Boston, Massachusetts are authorized by Law to remain closed.

1.7 "CAR" means any chimeric antigen receptor that is designed to bind to any molecule(s) that is(are) on or in a pathogenic agent, or on a cell surface, within a cell, or directly associated with a cell (for example, any antigens(s) or ligand(s) displayed on a cell surface, within a cell or directly associated with a cell).

1.8 "CAR-T Cell" means a T-lymphocyte that expresses one or more CARs on the surface of such cell.

1.9 "Challenging Party" means any Person that brings, assumes or participates in or that knowingly, willfully or recklessly assists in bringing a Patent Challenge.

1.10 "Change of Control" means, with respect to Juno, (a) a merger or consolidation of Juno with a third party which results in the voting securities of Juno outstanding immediately prior thereto ceasing to represent at least fifty percent (50%) of the combined voting power of the surviving entity immediately after such merger or consolidation, (b) a transaction or series of related transactions in which a third party, together with its Affiliates, becomes the owner of fifty percent (50%) or more of the combined voting power of Juno's outstanding securities other than through issuances by Juno of securities of Juno in a bona fide financing transaction or series of related bona fide financing transactions, or (c) the sale or other transfer to a third party of all or substantially all of Juno's assets or all or substantially all of Juno's business to which this Agreement relates.

1.11 "[**] Engineered T-Cell" means an Engineered T-Cell that utilizes [**] Reagents generated for a [**] Engineered T-Cell Target.

1.12 "[**] Engineered T-Cell Product" means any pharmaceutical product incorporating as an active ingredient a [**] Engineered T-Cell.

1.13 "[**] Engineered T-Cell Research" means those elements of the Research Program related to the research and development of [**] Engineered T-Cells.

1.14 "[**] Engineered T-Cell Target" has the meaning in Section 2.7(b).

1.15 "Class" means each separate class of products within a program [**], where there is an initial class of products (i.e. a Licensed Product with certain Gene Target modifications and directed to certain Protein Targets) and whether a subsequent product is a new class of Licensed Products resulting in additional milestones under Section 6.4 shall be determined as follows: (a) any new Gene Target modification done under the Research Program is a new class of Licensed

Product within the applicable program, and (b) if there is not a new Gene Target modification, but there is [**] that targets a Protein Target (and that Protein Target was not targeted in a previous class of Licensed Product within the same program [**] for which the milestones under Section 6.4 were paid), then (i) if the Licensed Product is to be approved for same indication as the prior Licensed Product, then such Licensed Product is not a new class and no new milestones accrue under Section 6.4, or (ii) if the Licensed Product will be approved for a new indication compared to the prior Licensed Product, then the Licensed Product is a new class of Licensed Product under the applicable program and additional milestones will accrue under Section 6.4. For the avoidance of doubt, under the foregoing clause (b), any improvements or additions that are not the [**] would not result in a new class of Licensed Product (e.g. armored CARs).

1.16 "Collaboration IP" means, collectively, the Collaboration Patent Rights and Collaboration Know-How.

1.17 "Collaboration Know-How" means all ideas, Inventions, data, instructions, processes, formulas, expert opinions and information, including biological, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical, clinical, safety, manufacturing and quality control data and information developed solely or jointly by or on behalf of Editas and/or Juno in the course of activities conducted pursuant to the Research Program.

1.18 "Collaboration Patent Rights" means (a) all patent applications the subject of which is an Invention conceived or reduced to practice solely or jointly by or on behalf of Editas and/or Juno in the course of activities conducted pursuant to the Research Program, (b) any divisions, continuations, and continuations-in-part (but only to the extent the claims are directed to the subject matter specifically described in the parent applications), including U.S. and foreign, (c) all patents that issue as a result of any of the foregoing, and (d) all reissues, reexaminations, extensions or other governmental actions which extend any of the subject matter of the patents in (c) above, and any substitutions, confirmations, registrations or revalidations of any of the foregoing.

1.19 "Commercial License" means a license set forth in a subsection of Section 4.2.

1.20 "Commercially Reasonable Efforts" means, with respect to a Party, the efforts required in order to carry out a task in a diligent and sustained manner without undue interruption or delay, which level is at least commensurate with the level of effort that a similarly situated Third Party would devote to a product of similar market potential and having similar commercial and scientific advantages and disadvantages resulting from its own research efforts or to which it has rights, taking into account its safety and efficacy, regulatory status, the competitiveness of the marketplace, its proprietary position, pricing, reimbursement, launching strategy and other market-specific factors, and all other relevant factors.

1.21 "Competent Authority(ies)" means, collectively, (a) the governmental entities in each country or supranational organization that is responsible for the regulation of any Licensed Product intended for use in the Exclusive Field (including the FDA and EMA), or (b) any other applicable regulatory or administrative agency in any country or supranational organization that is comparable to, or a counterpart of, the foregoing.

1.22 "Competitive Product" means, with respect to a Licensed Product, an Engineered T-Cell that utilizes Genome Editing Technology with respect to the same [**] Engineered T-Cell Target, [**] Engineered T-Cell Target or Exclusive Protein Target, as applicable.

1.23 "Confidential Information" has the meaning set forth in Section 9.1.

1.24 "Control," "Controls," "Controlled" or "Controlling" means possession of the ability to grant the licenses or sublicenses as provided herein without violating the terms of any agreement or other arrangements with any Third Party.

1.25 "Development" or "Develop" means pre-clinical and clinical drug development activities, including: test method development and stability testing, toxicology, formulation, process development, manufacturing scale-up, development-stage manufacturing, quality assurance/quality control procedure development and performance with respect to clinical materials, statistical analysis and report writing and clinical studies, regulatory affairs, and all other pre-Registration activities. When used as a verb, "Develop" means to engage in Development.

1.26 "Duke" means Duke University, a nonprofit educational and research institution organized under the laws of North Carolina.

1.27 "Duke Indemnitees" means Duke and its trustees, officers, employees, students, and agents.

1.28 "Duke In-License" means that certain License Agreement between Duke and Editas effective as of October 10, 2014, as amended.

1.29 "Editas Collaboration IP" means the Collaboration IP that is solely owned by Editas in accordance with Section 8.1. The "Editas Collaboration Patents" means the Collaboration Patents that are solely owned by Editas in accordance with Section 8.1.

1.30 "Editas IP" means, collectively, the Editas Patents and Editas Know-How.

1.31 "Editas Know-How" means all Know-How which is Controlled by Editas or its Affiliates at any time (a) during the Research Program Term or (b) after the Research Program Term and during the Term, and in all cases that either (1) relates to the type(s) of Genome Editing Technology used (or intended to be used) in the conduct of the Research Program and is reasonably necessary to research, develop, make, use, sell, offer for sale or import a Licensed Product or (2) was otherwise used in the conduct of the Research Program and is reasonably necessary to research, develop, make, use, sell, offer for sale or import a Licensed Product. The Collaboration Know-How shall not be Editas Know-How. To the extent Editas Know-How is subject to a license from a Third Party, it shall be included within the definition of Editas Know-How only if (i) it is the subject of a Foundational In-License, (ii) it is the subject of an In-License and the provisions of Section 8.4 are satisfied or (iii) it is the subject of the Duke In-License and the provisions of Section 8.5 are satisfied. Notwithstanding anything in this Agreement to the contrary, Editas Know-How shall not include any Know-How to the extent Controlled by any person or entity that acquires all or any part of Editas or an Affiliate of Editas, or any affiliates of such person or entity, in each case (A) which is Controlled by such person or entity immediately prior to the effective date of the acquisition or (B) which is Controlled by such person or entity on or after the effective

date of acquisition but is not Controlled by Editas or an Affiliate of Editas (excluding for purposes of this provision, such person or entity and Affiliates of Editas that are such Affiliates by virtue of controlling, being controlled by or under common control with such person or entity) and was developed, invented or obtained without the direct or indirect use of any non-public Editas Know-How.

1.32 "Editas Patents" means all Patent Rights which are owned or Controlled by Editas or its Affiliates at any time (a) during the Research Program Term (b) after the Research Program Term and during the Term, and in call cases to the extent they claim or cover the Editas Know-How. The Collaboration Patent Rights shall not be Editas Patents. To the extent an Editas Patent is the subject to a license from a Third Party, it shall be included within the definition of Editas Patents only if (i) it is the subject of a Foundational In-License, (ii) it is the subject of an In-License and the provisions of Section 8.4 are satisfied or (iii) it is the subject of the Duke In-License and the provisions of Section 8.5 are satisfied. Notwithstanding anything in this Agreement to the contrary, Editas Patents shall not include any Patent Rights to the extent owned or Controlled by any person or entity that acquires all or any part of Editas or an Affiliate of Editas, or any affiliates of such person or entity, in each case (A) which is Controlled by such person or entity immediately prior to the effective date of the acquisition or (B) which is Controlled by such person or entity on or after the effective date of acquisition but is not Controlled by Editas or an Affiliate of Editas (excluding for purposes of this provision, such person or entity and Affiliates of Editas that are such Affiliates by virtue of controlling, being controlled by or under common control with such person or entity) and was developed, invented or obtained without the direct or indirect use of any non-public Editas Know-How.

1.33 "Editas Solely Owned Patents" means the Editas Patents of which Editas is the sole owner. The Editas Solely Owned Patents as of the Effective Date are set forth on Schedule 1.33.

1.34 "EMA" means the European Medicines Agency of the European Union, or the successor thereto.

1.35 "Engineered T-Cell" means a CAR T-Cell or TCR-T Cell.

1.36 "Exclusive Field" means the diagnosis, treatment or prevention of any cancer in humans through the use of Engineered T-Cells, which shall exclude the diagnosis, treatment or prevention of medullary cystic kidney disease 1 regardless of whether such disease is characterized as a cancer.

1.37 "Exclusive Protein Target" shall have the meaning set forth in Section 2.7(d).

1.38 "FDA" means the Food and Drug Administration of the United States, or the successor thereto.

1.39 "Foundational In-License" means the Harvard-Broad License or the MGH License, and "Foundational In-Licenses" means the Harvard-Broad License and the MGH License.

1.40 "FTE" means a full-time individual dedicated to the Research Program, or in the case of less than a full-time, dedicated individual, a full-time, equivalent individual year, based upon a total of [**] hours per year of work in connection with the Research Program.

1.41 "FTE Rate" means [**] dollars ($[**]) per year, subject to an annual increase to occur upon the [**] anniversary of the Effective Date and to reoccur on each subsequent anniversary for increases in the all-items consumer price index for all urban consumers (CPI-U) reported for the most recent twelve (12) month period ending prior to such anniversary.

1.42 "Gene Target" means (a) a gene or series of genes, and (b) any variant, isoform or polymorphism of any such gene or series of genes.

1.43 "Genome Editing Technology" means clustered regularly interspaced short palindromic repeats (CRISPR), zinc finger nuclease, transcription activator-like effector nucleases (TALEN) and any other homing endonuclease genome-editing technology.

1.44 "Harvard-Broad License" means that certain License Agreement by and between The President and Fellows of Harvard College, The Broad Institute, Inc. and Editas effective as of October 29, 2014, as amended.

1.45 "HHMI" means the Howard Hughes Medical Institute.

1.46 "HHMI Indemnitees" means HHMI, and its trustees, officers, employees, and agents.

1.47 "In-License" has the definition in Section 8.4.

1.48 "In-License Agreement" means any of the Harvard-Broad License, MGH License, Duke In-License, or an agreement under the terms of which an In-License was granted.

1.49 "In-License Counterparty" means the Person(s) that granted a license(s) under the terms of an In-License Agreement.

1.50 "In-Licensor" means the Person(s) that granted an In-License.

1.51 "In-Licensor Indemnitees" means each In-Licensor and each of their current and former directors, governing board members, trustees, officers, faculty, affiliated investigators, medical and professional staff, employees, students, and agents and their respective successors, heirs and assigns.

1.52 "Incorporated [**] Reagent" means a [**] Reagent that is used in connection with a [**] Engineered T-Cell Product or [**] Engineered T-Cell Product, as the case may be, for which Juno has filed an IND for the treatment or prevention of any cancer in humans in the Exclusive Field.

1.53 "IND" means an investigational new drug application filed with the FDA as more fully defined in 21 C.F.R. § 312.3, or an equivalent application (such as a clinical trial authorization) filed with the EMA.

1.54 "IND Acceptance" means, with respect to a Licensed Product, the earliest of (a) acceptance by the FDA or the EMA of the filing of an IND for such Licensed Product, (b) the passage of any period of time determined by Law by the end of which the FDA or EMA is supposed

to comment on such filing, extended if any such comments were made by the period of time necessary to address such comments to the reasonable satisfaction of the FDA or EMA, (c) the first date on which a Party may commence the first clinical trial of such Licensed Product in the U.S. or E.U., or (d) the first dose of such Licensed Product in a human clinical trial in the U.S. or E.U.

1.55 "Institutions" means the President and Fellows of Harvard College, an educational and charitable corporation existing under the laws and the constitution of the Commonwealth of Massachusetts, and the Broad Institute, Inc., a non-profit Massachusetts corporation.

1.56 "Institution Indemnitees" means each Institution and MIT and each of their current and former directors, governing board members, trustees, officers, faculty, affiliated investigators, medical and professional staff, employees, students, and agents and their respective successors, heirs and assigns.

1.57 "Invention" means any new and useful process, article of manufacture, compound, composition of matter, formulation or apparatus, or any improvement thereof, discovery or finding, which is patentable.

1.58 "IP" means intellectual property of any and all types, including patents, patent applications, copyrights, but excluding trademarks and trademark applications.

1.59 "Joint Collaboration IP" means the Collaboration IP that is jointly owned by Editas and Juno in accordance with Section 8.1. The "Joint Collaboration Patents" shall mean the Collaboration Patents that are jointly owned by Editas and Juno in accordance with Section 8.1.

1.60 "JRC" or "Joint Research Committee" has the meaning set forth in Section 3.1.

1.61 "Juno Collaboration IP" means the Collaboration IP that is solely owned by Juno in accordance with Section 8.1. The "Juno Collaboration Patents" means the Collaboration Patents that are solely owned by Juno in accordance with Section 8.1.

1.62 "Know-How" means any ideas, Inventions, data, instructions, processes, formulas, expert opinions and information, including biological, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical, clinical, safety, manufacturing and quality control data or information.

1.63 "Law" means all laws, statutes, rules, codes, regulations, orders, judgments or ordinances applicable to a Party, this Agreement or the activities contemplated hereunder.

1.64 "Licensed Product" means, collectively, the [**] Engineered T-Cell Product, [**] Engineered T-Cell Product and [**] Engineered T-Cell Product.

1.65 "Materials" means any tangible chemical or biological research materials that are provided or otherwise made available by one Party to the other Party under the terms of Section 2.8 for use in performance of the Research Program or exercising rights under the licenses granted hereunder.

1.66 "MGH" means The General Hospital Corporation, d/b/a Massachusetts General Hospital.

1.67 "MGH Indemnitees" means MGH and its Affiliates and their respective trustees, directors, officers, medical and professional staff, employees, and agents and their respective successors, heirs and assigns.

1.68 "MGH License" means that certain Exclusive Patent License Agreement by and between MGH and Editas effective as of August 29, 2014, as amended.

1.69 "[**] Engineered T-Cell" means an Engineered T-Cell that utilizes [**] Reagents generated for a [**] Engineered T-Cell Target.

1.70 "[**] Engineered T-Cell Product" means any pharmaceutical product incorporating as an active ingredient a [**] Engineered T-Cell.

1.71 "[**] Engineered T-Cell Research" means those elements of the Research Program related to the research and development of [**] Engineered T-Cells.

1.72 "[**] Engineered T-Cell Target" has the meaning in Section 2.7(a).

1.73 "MIT" means the Massachusetts Institute of Technology, a not-for-profit Massachusetts Corporation with a principal place of business at 77 Massachusetts Avenue, Cambridge, Massachusetts 02139.

1.74 "Net Sales" means the gross amount billed or invoiced by or on behalf of Juno, its Affiliates, Sublicensees and any Affiliates of such Sublicensees (in each case, the "Invoicing Entity") or if not billed or invoiced the gross amount received by the Invoicing Entity, on sales, leases, uses or other transfers of Licensed Products, less the following to the extent applicable with respect to such sales, leases or other transfers and not previously deducted from the gross invoice price: (a) customary trade, quantity or cash discounts to the extent actually allowed and taken; (b) amounts actually repaid or credited by reason of rejection, return or recall of any previously sold, leased or otherwise transferred Licensed Products; (c) rebates granted or given; (d) allowances for non-collectible receivables; (e) customer freight charges that are paid by or on behalf of the Invoicing Entity; and (f) to the extent [**], any sales, value added or similar taxes, custom duties or other similar governmental charges levied directly on the production, sale, transportation, delivery or use of a Licensed Product that are paid by or on behalf of the Invoicing Entity, but not including any tax levied with respect to income; provided that:

(a) in no event shall the aggregate amount of all deductions made pursuant to clauses (d) and (e) above in any calendar quarter exceed [**] percent ([**]%) of Net Sales in such calendar quarter;

(b) Net Sales shall not include (a) sales or other transfers of any Licensed Product used for clinical trials or other research, or (b) donations for charity or compassionate use for which an Invoicing Entity does not receive consideration;

(c) in any transfers of Licensed Products between an Invoicing Entity and an Affiliate or Sublicensee of such Invoicing Entity not for the purpose of resale by such Affiliate or Sublicensee, Net Sales shall be equal to the fair market value of the Licensed Products so transferred, assuming an arm's length transaction made in the ordinary course of business;

(d) in the event that (i) an Invoicing Entity receives non-cash consideration for any Licensed Products, (ii) an Invoicing Entity sells Licensed Products in a transaction not at arm's length with a non-Affiliate of an Invoicing Entity, or (iii) any Licensed Product is sold by an Invoicing Entity at a discounted price that is [**], Net Sales shall be calculated based on the fair market value of such consideration or transaction, assuming an arm's length transaction made in the ordinary course of business, provided that, if a Licensed Product is sold under circumstances in which the discounted price is the result of market forces and not a quid pro quo for value other than the monetary consideration charged in such sale of Licensed Product, such discounted price shall be deemed to be a customary price;

(e) with respect to any provision hereof requiring a calculation of fair market value, assuming an arm's length transaction made in the ordinary course of business, Invoicing Entity may use the [**]; and

(f) sales of Licensed Products by an Invoicing Entity to its Affiliate or a Sublicensee for resale by such Affiliate or Sublicensee shall not be deemed Net Sales. Instead, Net Sales shall be determined based on the gross amount billed or invoiced by such Affiliate or Sublicensee upon resale of such Licensed Products to any third party that is not an Affiliate or Sublicensee of the Invoicing Entity.

With respect to Licensed Products, if any, that are sold at a discount in "bundles" with other products or services (i.e., sold together in a single sales transaction with other products or services for which separate prices are charged in such transaction), if the amount invoiced for the applicable Licensed Products represents a discount greater than [**] then Net Sales for such "bundled" Licensed Product shall be determined using a sales price based [**], less applicable deductions as set forth above.

If a product is sold by Juno its Affiliate or Sublicensee as a pharmaceutical preparation incorporating two or more therapeutically active ingredients, and where at least one of the therapeutically active ingredients is a Licensed Product and at least one therapeutically active ingredient is not a Licensed Product (a "Combination Product"), then for purposes of calculating Juno's payment obligations under Section 6.6, Net Sales shall be determined as follows:

(i) If one or more Licensed Products are sold as part of a Combination Product in a particular country, and all therapeutically active ingredients contained in the Combination Product are sold separately in such country, the Net Sales of such Combination Product, for the purposes of determining payments based on Net Sales, shall be determined by multiplying the Net Sales of the Combination Product in such country, during the applicable Net Sales reporting period, by the [**].

(ii) If one or more Licensed Products are sold as part of a Combination Product and are sold separately in such country, but the other therapeutically active ingredients included in the Combination Product are not sold separately in such country, the Net Sales of the Combination Product, for the purposes of determining payments based on Net Sales, shall be determined by multiplying the Net Sales of the Combination Product in such country by the [**].

(iii) If the Net Sales of the Licensed Product(s) when included in a Combination Product cannot be determined using the methods above, Net Sales for the purposes of determining payments based on Net Sales shall be [**].

1.75 "Non-Exclusive Field" means all fields of use outside of the Exclusive Field, excluding the diagnosis, treatment or prevention of medullary cystic kidney disease 1.

1.76 "Non-Exclusive Field Deal" shall have the meaning in Section 4.3(a).

1.77 "Party" or "Parties" means, respectively, Editas or Juno individually, or Editas and Juno collectively.

1.78 "Patent Challenge" means any direct or indirect dispute or challenge, or any knowing, willful, or reckless assistance in the dispute or challenge, of the validity, patentability, scope, priority, construction, non-infringement, inventorship, ownership or enforceability of any Editas Patents or any claim thereof, or opposition or assistance in the opposition of the grant of any letters patent within the Editas Patents, in any legal or administrative proceedings, including in a court of law, before the United States Patent and Trademark Office or other agency or tribunal in any jurisdiction, or in arbitration including, without limitation, by reexamination, inter partes review, opposition, interference, post-grant review, nullity proceeding, preissuance submission, third party submission, derivation proceeding or declaratory judgment action; provided, however, that the term Patent Challenge shall not include (i) Juno or its Affiliates being an essential party in any patent interference proceeding before the United States Patent and Trademark Office, which interference Juno or its Affiliates acts in good faith to try to settle, or (ii) Juno, due to its status as an exclusive licensee of patent rights other than the Editas Patents, being named by the licensor of such patent rights as a real party in interest in such an interference, so long as Juno either abstains from participation in, or acts in good faith to settle, the interference. For clarity, a Patent Challenge shall not include arguments made by Juno that (a) distinguish the inventions claimed in patents or patent applications owned or controlled by Juno ("Juno Patents") from those claimed in the Editas Patents but (b) do not disparage the Editas Patents or raise any issue of Editas Patents' compliance with or sufficiency under applicable patent laws, regulations or administrative rules, in each case (i) in the ordinary course of ex parte prosecution of the Juno Patents or (ii) in inter partes proceedings before the United States Patent and Trademark Office or other agency or tribunal in any jurisdiction (excluding interferences or derivation proceedings), or in arbitration, wherein the Juno Patents have been challenged.

1.79 "Patent Rights" means patents, patent applications or provisional patent applications, utility models and utility model applications, petty patents, innovation patents, patents of addition, divisionals, continuations, continuation-in-part applications (only to the extent of claims that are entitled to the priority date of the parent application), continued prosecution applications, requests for continued examinations, reissues, renewals, reexaminations and

extensions and supplementary protection certificates granted in relation thereto, in any country of the world. For clarity, Patent Rights shall include any Patent Right that claims priority to or has common priority with such Patent Rights.

1.80 "Person" means an individual, sole proprietorship, partnership, limited partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture or other similar entity or organization, including a government or political subdivision, department or agency of a government.

1.81 "Phase II Trial" means a human clinical trial in any country that is intended to preliminarily evaluate the efficacy and safety of a Licensed Product for a particular indication or indications in patients with the disease or indication under study or would otherwise satisfy requirements of 21 CFR 312.21(b).

1.82 "Protein Target" means (a) a protein, and (b) any variant, isoform or polymorphism of any such protein.

1.83 "Registration" means the permits, licenses, authorizations, registrations and regulatory approvals (including BLAs) granted by the applicable Competent Authority necessary for the distribution, marketing, promotion, offer for sale, use, import, export or sale of a Licensed Product in a regulatory jurisdiction.

1.84 "[**] Reagents" means, [**].

1.85 "Research Plan" means the written research plan governing the joint effort of the Parties in conducting the Research Program, which may be amended from time to time by mutual agreement of the Parties or as described in Section 2.3. The initial Research Plan is attached hereto as Exhibit A.

1.86 "Research Program" means the collaborative program of research undertaken by the Parties pursuant to this Agreement.

1.87 "Research Program Term" means the period commencing on the Effective Date and ending upon the date five (5) years after the Effective Date (the "Initial Research Program Term") or such later date as is agreed by the Parties in accordance with Section 2.5.

1.88 "Sublicensee" means, with respect to Juno, a Third Party to whom Juno (or its Affiliate or another of its Sublicensees) has granted a license or sublicense under any licensed Collaboration IP to develop, make and have made, use or commercialize a Licensed Product.

1.89 "TCR" means a T cell receptor that is capable of binding to any antigen(s) (for example, any peptide), or any epitope thereof, in the context of one or more major histocompatibility complex (MHC) molecule(s). TCR may include naturally-occurring T cell receptors and/or recombinant T cell receptors, such as affinity-altered T cell receptors.

1.90 "TCR-T Cell" means a T-lymphocyte that expresses one or more TCRs on the surface of such cell.

1.91 "Technology Transfer Plan" means the Technology Transfer Plan between the Parties attached hereto as Exhibit B.

1.92 "Term" has the meaning set forth in Section 13.1.

1.93 "Territory" means worldwide.

1.94 "Third Party" means any Person other than Editas and Juno, and their respective Affiliates.

1.95 "Valid Claim" means: (a) a claim of an issued and unexpired patent within the Editas Patents or Collaboration Patents, as applicable, that has not been (i) held permanently revoked, unenforceable, unpatentable or invalid by a decision of a court or governmental body of competent jurisdiction, unappealable or unappealed within the time allowed for appeal, (ii) disclaimed or rendered unenforceable through disclaimer or otherwise, or (iii) abandoned, or (b) a pending claim of a pending patent application within the Patent Rights, which claim has not been pending for more than [**] years from the first substantive office action with respect to the pending claim and has not been abandoned or finally rejected without the possibility of appeal or refiling or without such appeal having been taken or refiling having been made within the applicable time periods. Notwithstanding the foregoing, (i) the [**] year pendency period set forth in clause (b) above shall only apply if, after [**] years of prosecution on the merits of a given application, Juno notifies Editas in writing that it does not believe that Editas should continue to prosecute such application and Editas continues to do so at its discretion, and (ii) if the prosecution of a given application is interrupted and/or delayed (A) by a patent office or (B) due to a Patent Challenge or a patent office proceeding such as an interference, appeal or opposition, then in each case (A) and (B) the pendency of such Patent Challenge or proceeding(s) shall not be included in the [**] year time period set forth above. The invalidity of a particular claim in one or more countries shall not invalidate such claim in any remaining countries. For the avoidance of doubt, a pending claim of a patent application filed pursuant to the Patent Cooperation Treaty shall be considered pending in all designated jurisdictions.

ARTICLE 2
RESEARCH PROGRAM

2.1 Goals. The goals of the Research Program are to (a) research and develop [**] Engineered T-Cells, (b) research and develop [**] Engineered T-Cells, and (c) research and develop [**] Engineered T-Cells, in each case in accordance with the Research Plan. This Agreement may be amended upon the mutual written agreement of the Parties to substitute a different goal of the Research Program for one of the three set forth in the immediately preceding sentence, in which case such amendment shall specify such modifications to this Agreement as the Parties may deem necessary or desirable, including the adoption of an appropriate amendment to the Research Plan.

2.2 Conduct of the Research Program.

(a) General. Subject to the terms and conditions set forth herein, the Parties shall conduct the Research Program in accordance with the Research Plan, which shall be funded

as set forth in Section 6.2. Each Party shall use Commercially Reasonable Efforts to perform its obligations under the Research Plan.

(b) Use of Third Parties. Either Party shall have the right to use the services of any Third Party to perform its obligations under the Research Plan to the extent that such Third Party is specifically approved in the Research Plan or otherwise approved by the JRC, provided that any permitted Third Party must have entered into a written agreement with such Party that includes terms and conditions (i) protecting and limiting use and disclosure of Confidential Information comparable to the requirements under this Agreement and (ii) requiring the Third Party and its personnel to assign to such Party all right, title and interest in and to any intellectual property (and intellectual property rights) created or conceived in connection with performance of subcontracted activities that if such activities had been performed by such Party, would be subject to a license granted by such Party to the other Party hereunder. Each Party shall remain at all times fully liable for its responsibilities under this Agreement.

(c) Compliance with Laws. Each Party shall conduct the Research Program in accordance with all applicable Laws. Each Party hereby certifies that it will not employ or otherwise use in any capacity in performing any activity hereunder the services of any Person known to it to be debarred under 21 USC §335a.

2.3 Research Plan. The Research Program shall be carried out in accordance with a mutually agreed upon Research Plan, which shall establish specific research objectives and the research tasks to be performed and resources to be provided by each Party. The initial Research Plan, attached hereto as Exhibit A on the Effective Date, establishes: (a) the scope of the research activities which shall be performed by the Parties; (b) the research objectives and work plan activities with respect to the Research Program; and (c) the transfection/transduction criteria. The Parties shall agree to a final Research Plan within [**] days after the Effective Date, which upon such agreement shall be attached hereto as a revised Exhibit A. Except for amendments to the Research Plan made in accordance with ARTICLE 3, any modification or amendments to the Research Plan shall be subject to the mutual agreement of the Parties. The Research Plan shall be reviewed on an ongoing basis by the Joint Research Committee, which shall recommend to the Parties such amendments to the Research Plan as deemed necessary or desirable by the Joint Research Committee from time to time.

2.4 Research Program Staffing. During the Research Program and subject to Juno's funding such FTEs pursuant to Section 6.2, Editas shall devote the number of FTEs to the conduct of the Research Program as is specified in the Research Plan; provided, however, that from and after the [**] anniversary of the Effective Date, such number shall be subject to increase or decrease as may be recommended by the Joint Research Committee from time to time, but no more frequently than [**], and agreed by the Parties. Unless otherwise agreed by Editas in writing, any increase or decrease in the number of FTEs Editas shall devote to the conduct of the Research Program shall be effective no earlier than the first day of the [**]calendar month commencing after the date such increase or decrease shall have been agreed by the Parties.

2.5 Extension of Research Program Term. The Initial Research Program Term may be extended for up to two (2) additional one (1) year periods (seven (7) years total). Each such one (1) year extension shall be requested by Juno in writing no later than (a) with respect to the first

extension, [**] months prior to the expiration date of the Initial Research Program Term, and (b) with respect to the second extension, [**] months prior to the expiration of the first extension. No later than [**] days after Juno's request, Editas shall agree or refuse such extension request by written notice to Juno. If Editas agrees to such extension request, Juno shall pay the extension fee described in Section 6.3 no later than the expiration of the then current Research Program Term. If Editas refuses such extension request, the Research Program Term shall not be extended.

2.6 Records; Inspection.

(a) Records. Each of Editas and Juno shall maintain records of the Research Program (or cause such records to be maintained) in sufficient detail and in good scientific manner as shall properly reflect all work done and results achieved by such Party in the performance of the Research Program (the "Records"), including all data in the form required under any applicable governmental regulations. Each Party shall maintain its Records during the Research Program Term and for a period of [**] years thereafter. During the Research Program Term and for a period of [**] years thereafter, a Party shall, upon written request by the other Party, which shall not be unreasonably made: (1) make all Records of such Party available for inspection and review by such other Party during normal business hours upon reasonable advance notice; and (2) provide copies of the relevant portions of the Records of such Party as may reasonably be requested by such other Party for purposes of review by a patent attorney of such other Party for the sole purpose of Prosecuting and Maintaining such other Party's Patent Rights or compliance by such other Party with applicable laws, rules or regulations. Any time after the completion of the Research Program Term, a Party may in its sole discretion transfer a copy of the Records of such Party kept pursuant to this Section 2.6(a) to the other Party rather than continuing to maintain such Records itself. Each Party's Records shall at all times during and after the Research Program Term remain such Party's Confidential Information.

(b) Reports and Information Exchange. Between [**] and [**] Business Days prior to each scheduled JRC meeting, each Party shall provide to the JRC a written report on the progress of the Research Program, summarizing the work performed by such Party under the Research Program and evaluating the work performed in relation to the goals of the Research Program. Each Party shall provide the JRC with such other information required under the Research Program, or reasonably requested by the other Party at least [**] Business Days prior to a scheduled JRC meeting and reasonably available to such Party, relating to the progress toward the goals or performance by such Party of the Research Program. During periods between meetings of the JRC during the Research Program Term, each of Juno and Editas shall use Commercially Reasonable Efforts to disclose to the other Party through their respective Project Leaders (as defined below) any important result achieved in the Research Program promptly after its importance is appreciated.

2.7 Targets of the Research Program.

(a) [**] Targets. An aggregate of [**] Gene Targets (the "[**] Maximum Number") may be the subject of the [**] Engineered T-Cell Research during the Research Program Term (the "[**] Engineered T-Cell Targets"). A [**] Engineered T-Cell Target is a Gene Target that acts to [**]. As of the Effective Date, the Parties have agreed on an initial, partial list of the [**] Engineered T-Cell Targets, which is attached hereto as Schedule 2.7(a).

During the period beginning on the Effective Date and ending on the [**] anniversary of the Effective Date (the "Gene Selection Period"), Juno shall have the right to include as [**] Engineered T-Cell Targets up to that number of additional Gene Targets as equals the [**] Maximum Number minus the number of Gene Targets set forth on Schedule 2.7(a) as of the Effective Date. During the Gene Selection Period, Juno shall notify Editas if it wishes to include additional Gene Targets as [**] Engineered T-Cell Targets. Such notice shall identify with specificity the Gene Target(s) that Juno wishes to add, so that Editas may distinguish it(them) from other Gene Targets. Juno shall only designate additional Gene Targets under this Section 2.7(a) that Juno [**]. Any Gene Target that Juno designates during the Gene Selection Period that meets the foregoing criteria shall be a [**] Engineered T-Cell Target under this Agreement upon Juno providing such notice (subject to the (the [**] Maximum Number of Gene Targets limit set forth herein), and Schedule 2.7(a) shall be updated to reflect such additional Gene Targets. Commencing on the date that is [**] years after the commencement of the Research Program Term, if within [**] days after receipt of such a notice from Juno, Editas notifies Juno that any Gene Target that Juno has designated under this Section 2.7(a) is the subject of a Non-Exclusive Field Deal in existence as of the date of notice from Juno, then Editas shall not be granting to Juno under Section 4.2(a) the non-exclusive license in the Non-Exclusive Field with respect to [**] Engineered T-Cell Products that utilize [**] Reagents for such Gene Target. Once an aggregate of the [**] Maximum Number of Gene Targets have been designated [**] Engineered T-Cell Targets at any point during the Research Program Term, Juno may not designate additional Gene Targets under this Section 2.7(a) unless it first removes a [**] Engineered T-Cell Target from Schedule 2.7(a) by providing written notice to Editas. If by the end of the Research Program Term Juno has not elected to develop any [**] Reagents under the Research Program with respect to a [**] Engineered T-Cell Target, then such [**] Engineered T-Cell Target shall no longer be a [**] Engineered T-Cell Target and shall be removed from Schedule 2.7(a). Prior to the end of the Research Program Term, Juno shall designate by written notice to Editas up to [**] Engineered T-Cell Targets for which [**] Reagents were developed under the Research Program (the "Final [**] Engineered T-Cell Targets").

(b) [**] Targets. An aggregate of [**] Gene Targets (the "[**] Maximum Number") may be the subject of the [**] Engineered T-Cell Research during the Research Program Term (the "[**] Engineered T-Cell Targets"). A [**] Engineered T-Cell Target is a Gene Target [**]. As of the Effective Date, the Parties have agreed on an initial, partial list of the [**] Engineered T-Cell Targets, which is attached hereto as Schedule 2.7(b). During the Gene Selection Period, Juno shall have the right to include as [**] Engineered T-Cell Targets up to that number of additional Gene Targets as equals the [**] Maximum Number minus the number of Gene Targets set forth on Schedule 2.7(b) as of the Effective Date. During the Gene Selection Period, Juno shall notify Editas if it wishes to include additional Gene Targets as [**] Engineered T-Cell Targets. Such notice shall identify with specificity the Gene Target(s) that Juno wishes to add, so that Editas may distinguish it(them) from other Gene Targets. Juno shall only designate additional Gene Targets under this Section 2.7(b) that Juno [**]. Any Gene Target that Juno designates during the Gene Selection Period that meets the foregoing criteria shall be a [**] Engineered T-Cell Target under this Agreement upon Juno providing such notice (subject to the (the [**] Maximum Number of Gene Targets limit set forth herein), and Schedule 2.7(b) shall be updated to reflect such additional Gene Targets. Commencing on the date that is [**] years after the commencement of the Research Program Term, if within [**] days after receipt of such a notice from Juno, Editas notifies Juno that any Gene Target that Juno

has designated under this Section 2.7(b) is the subject of a Non-Exclusive Field Deal in existence as of the date of notice from Juno, then Editas shall not be granting to Juno under Section 4.2(c) the non-exclusive license in the Non-Exclusive Field with respect to [**] Engineered T-Cell Products that utilize [**] Reagents for such Gene Target. Once an aggregate of the [**] Maximum Number Gene Targets have been designated [**] Engineered T-Cell Targets at any point during the Research Program Term, Juno may not designate additional Gene Targets under this Section 2.7(b) unless it first removes a [**] Engineered T-Cell Target from Schedule 2.7(b) by providing written notice to Editas. If by the end of the Research Program Term Juno has not elected to develop any [**] Reagents under the Research Program with respect to a [**] Engineered T-Cell Target, then such [**] Engineered T-Cell Target shall no longer be a [**] Engineered T-Cell Target and shall be removed from Schedule 2.7(b). Prior to the end of the Research Program Term, Juno shall designate by written notice to Editas up to [**] Engineered T-Cell Targets for which [**] Reagents were developed under the Research Program (the "Final [**] Engineered T-Cell Targets").

(c) Additional [**] or [**] Targets. Notwithstanding anything in the foregoing Sections 2.7(a) or 2.7(b) to the contrary, if on or after the [**] anniversary of the Effective Date the Parties agree that the [**] Engineered T-Cell Research or [**] Engineered T-Cell Research, as the case may be, is not progressing as desired on account of a lack of qualified Gene Targets that could be pursued, the Parties may agree by mutual written consent to enter into a program of screening to identify such additional Gene Targets and, in such case, the Parties shall amend accordingly the Research Plan and the provisions of Sections 2.7(a) or 2.7(b), as the case may be.

(d) [**] Gene Targets. An aggregate of [**] Gene Targets (the "[**] Maximum Number") may be the subject of the [**] Engineered T-Cell Research during the Research Program Term (the "[**] Engineered T-Cell Targets"). All Gene Targets on which the Parties have agreed to conduct [**] Engineered T-Cell Research will be set forth on Schedule 2.7(d). During the period beginning on the Effective Date and ending [**] months after the Effective Date (the "[**] Target Selection Period"), Juno shall have the right to include as [**] Engineered T-Cell Targets up to that number of additional Gene Targets as equals the [**] Maximum Number minus the number of Gene Targets set forth on Schedule 2.7(d) as of the Effective Date. During the [**] Target Selection Period, Juno shall notify Editas if it wishes to include additional Gene Targets as [**] Engineered T-Cell Targets. Such notice shall identify with specificity the Gene Target(s) that Juno wishes to add, so that Editas may distinguish it(them) from other Gene Targets. Juno shall only designate additional Gene Targets under this Section 2.7(b) that Juno [**]. Any Gene Target that Juno designates during the [**] Target Selection Period that meets the foregoing criteria shall be an [**] Engineered T-Cell Target under this Agreement upon Juno providing such notice (subject to the [**] Maximum Number of Gene Targets limit set forth herein), and Schedule 2.7(b) shall be updated to reflect such additional Gene Targets. Once an aggregate of the [**] Maximum Number of Gene Targets have been designated [**] Engineered T-Cell Targets at any point during the Research Program Term, Juno may not designate additional Gene Targets under this Section 2.7(b) unless it first removes an [**] Engineered T-Cell Target from Schedule 2.7(b) by providing written notice to Editas. The goal of the Research Program with respect to the [**] Engineered T-Cell Development shall be to identify no more than [**] Engineered T-Cell Targets for further research and Development by the end of the [**] Target Selection Period. If the parties reach

agreement on such [**] or fewer [**] Engineered T-Cell Targets by the end of the [**] Target Selection Period, then all other Gene Targets shall no longer be [**] Engineered T-Cell Targets and shall be removed from Schedule 2.7(b). If the parties do not reach agreement on such [**] or fewer [**] Engineered T-Cell Targets by the end of the [**] Target Selection Period, then Editas shall provide written notice to Juno of such failure and of Juno's right to designate such [**] or fewer [**] Engineered T-Cell Targets in accordance with this Section 2.7(d). Juno shall designate such [**] or fewer [**] Engineered T-Cell Targets by [**] days after the date such notice is given. If the parties do not reach agreement on such [**] or fewer [**] Engineered T-Cell Targets, Editas provides such notice and Juno fails to designate such [**] or fewer [**] Engineered T-Cell Targets as provided in this Section 2.7(d), then Editas shall provide an additional written notice to Juno regarding the designation of the [**] Engineered T-Cell Targets (the "Reminder Notice"). If Juno fails to designate such [**] or fewer [**] Engineered T-Cell Targets within [**] days after the date the Reminder Notice is given, then the [**] Engineered T-Cell Research shall be deemed terminated. Unless the [**] Engineered T-Cell Research shall have been deemed terminated, during the period commencing on the end of the [**] Target Selection Period and terminating [**] months thereafter, Juno shall have the right to add or replace [**] Engineered T-Cell Targets (provided that any additions shall not increase the total number of [**] Engineered T-Cell Targets to more than [**] over the maximum number of [**] Engineered T-Cell Targets on which the parties have agreed or which Juno has designated, as applicable, at the end of the [**] Target Section Period as provided in this Section 2.7(d), but in no event more than [**] total) by providing written notice to Editas. Prior to the end of the Research Program Term, Juno shall designate by written notice to Editas the [**] Engineered T-Cell generated or developed under the Research Program, if any, and such notice shall contain such information as may be reasonably necessary to define with specificity such [**] Engineered T-Cell, including the number and identification of [**] Engineered T-Cell Targets modulated in such [**] Engineered T-Cell for which [**] Reagents were developed under the Research Program (the "Final [**] Engineered T-Cell Targets").

(e) [**] Protein Targets. During the Research Program, any Protein Target may be the subject of the [**] Engineered T-Cell Research. Prior to the expiration of the Research Program Term, Juno shall designate up to [**] Protein Targets as Exclusive Protein Targets. Juno's notice of such designation shall identify with specificity the Protein Target(s) that Juno is designating as Exclusive Protein Targets, so that Editas may distinguish it(them) from other Protein Targets. Juno shall only designate Protein Targets under this Section 2.7(e) that Juno [**].

2.8 Technology Transfer.

(a) To Facilitate the Research Program. In order to facilitate the Research Program, each Party shall, as set forth in the Research Plan, provide to the other Party certain Materials and Know-How Controlled by the supplying Party for use by the other Party in furtherance of the Research Program. All Materials transferred pursuant to the Research Program shall be used (i) only for the specific purpose provided for in the Research Plan or within the scope of the licenses granted hereunder, and (ii) solely under the control of the receiving Party or, in the case of Juno in the exercise of its license, optionally to its Sublicensee. The Materials may not be used or delivered to or for the benefit of any Third Party (other than a Juno Sublicensee, in the case of Juno in the exercise of its license) without the prior written

consent of the supplying Party, and shall not be used in research or testing involving human subjects, except as expressly contemplated in the Research Plan or within the scope of the commercial license under this Agreement. All Materials shall be returned to the supplying Party or destroyed (at the election of the supplying Party) promptly after completion of the use permitted under this Agreement.

(b) To Facilitate Juno's Continued Licenses. During the Research Program Term, Editas and Juno will prepare a technology transfer plan that shall be attached hereto as Exhibit B (the "Technology Transfer Plan") that will provide for the transfer by Editas to Juno of such reasonable quantities of Materials and information within Collaboration Know-How and Editas Know-How used in the performance of the Research Program that are Controlled by Editas as may reasonably be required for Juno to manufacture the Engineered T-Cells to which Juno has received a license hereunder. At any time during the Research Program Term and for the [**] months following the expiration of the Research Program Term, Editas and Juno shall implement the Technology Transfer Plan as contemplated by this Section 2.9(b) upon Juno's request.

(c) No Warranty. MATERIALS ARE PROVIDED "AS IS" AND WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE OR ANY WARRANTY THAT THE USE OF THE MATERIALS WILL NOT INFRINGE OR VIOLATE ANY PATENT OR OTHER PROPRIETARY RIGHT OF ANY THIRD PARTY.

ARTICLE 3
GOVERNANCE

3.1 Project Leaders. Within [**] Business Days after the Effective Date, each Party will appoint (and provide written notice to the other Party of the identity of) a senior representative having a general understanding of biopharmaceutical discovery and development issues to act as its project leader under this Agreement (each, a "Project Leader"). The Project Leaders will serve as the contact point between the Parties with respect to the Research Program, and will be primarily responsible for: (a) facilitating the flow of information and otherwise promoting communication, coordination of the day-to-day work and collaboration between the Parties; (b) providing single point communication for seeking consensus internally within the respective Party's organization; and (c) raising cross-Party or cross-functional disputes in a timely manner. The Project Leaders shall conduct regular telephone conferences as deemed necessary or appropriate, to exchange informal information regarding the progress of the Research Program. Each Party may change its designated Project Leader from time to time upon prior written notice to the other Party. Each Project Leader may designate a substitute to temporarily perform the functions of that Project Leader by prior written notice to the other Party.

3.2 Joint Research Committee. Promptly after the Effective Date, Juno and Editas shall establish a joint research committee (the "Joint Research Committee" or "JRC") to oversee, review and recommend direction of the Research Program. The responsibilities of the Joint Research Committee shall include, among other things monitoring and reporting research progress and

ensuring open and frequent exchange between the Parties regarding Research Program activities. The JRC shall be disbanded upon expiration of the Research Program Term.

3.3 Membership. The JRC shall comprise [**] representatives of Juno named by Juno and [**] representatives of Editas named by Editas. A Party's representatives on the JRC shall have appropriate technical credentials, experience and knowledge, and ongoing familiarity with, the Research Program. Promptly after the Effective Date, each Party shall designate by notice to the other Party its initial representatives on the JRC. Each Party may each replace one or more of its JRC representatives at any time, in its sole discretion, upon notice to the other Party. From time to time, the JRC may establish subcommittees, to oversee particular projects or activities, and such subcommittees shall be constituted as the JRC agrees.

3.4 Meetings. During the Research Program Term, the JRC shall meet at least [**]. Additional meetings of the JRC may be held upon the mutual agreement of the Parties. The first meeting of the JRC shall occur within [**] days after the Effective Date. Meetings of the JRC shall be effective only if at least [**] representatives of each Party are present or participating. The time and location of each meeting shall be as agreed by the Parties, and meetings may be held in person, alternating locations between the Parties or at such other locations as the Parties agree, or by telephone or video conference; provided, however, that at least [**] of the JRC shall be held in person each year. With the consent of the Parties, other representatives of Editas or Juno may attend JRC meetings as nonvoting observers. Each Party shall be responsible for all of its own costs and expenses associated with preparing for and attending meetings of the JRC. The JRC shall be co-chaired by a representative from each Party. The chairpersons shall set the agendas for the JRC meetings in advance.

3.5 Minutes. The JRC shall keep accurate minutes of its deliberations which shall record all proposed decisions and all actions recommended or taken. The Parties will rotate the responsibility for taking, preparing and issuing minutes for each JRC meeting, which shall be sent to all members of the JRC within [**] Business Days after each meeting. All records of the JRC shall at all times be available to both Editas and Juno.

3.6 Decision Making.

(a) General. Decisions of the JRC shall be made by unanimous vote, with each Party having one vote. If the votes required to approve a decision cannot be reached within the JRC, then the Parties shall refer the matter, within [**] Business Days after the matter was first considered by the JRC, to their respective Chief Executive Officers ("CEOs") for discussion and attempted resolution in good faith. Such resolution, if any, of a referred matter by the CEOs shall be final and binding upon the Parties and shall be considered a decision of the JRC for purposes of this Agreement. If [**] Business Days after the matter was first submitted to the CEOs, the CEOs are unable to reach consensus, then (i) Juno shall have the deciding vote on any matter related to research determinations regarding the development of a [**] Engineered T-Cell Product, a [**] Engineered T-Cell Product or an [**] Engineered T-Cell Product, in each case within the scope of the Research Program, provided that if Juno's decision would require Editas to incur any additional costs and/or expenses in connection with the Research Program, then [**], and (ii) Editas shall have the deciding vote on any matter solely related to research determinations regarding the development of the Editas Know-How or Editas Patents or the use

of the Genome Editing Technology (provided, however, that Editas shall exercise its vote regarding the use of Genome Editing Technology in good faith and in a manner consistent with the objectives of the Research Program and the terms of this Agreement), provided that such decision may not require Juno to fund any additional costs and expenses without Juno's prior written consent. Notwithstanding the foregoing, [**] shall have the right, without the need to escalate a matter through the foregoing process, to amend the Research Plan to add additional development under the Research Program provided that (A) such development is still within the scope of the Research Program (i.e. the development involves generating an Engineered T-Cell for a [**] Engineered T-Cell Target or [**] Engineered T-Cell Target, or generating an [**] Engineered T-Cell, in each case for use in the Exclusive Field), (B) [**] has provided the JRC a description of the scope of the new development, (C) such development does not involve the use of [**] (except as agreed by [**] in writing in its sole discretion), (D) [**] is responsible for funding the costs and expenses for such additional development, (E) such additional development does not increase the number of Gene Targets under research in any of the [**] Engineered T-Cell Research, [**] Engineered T-Cell Research or [**] Engineered T-Cell Research beyond those already identified as Gene Targets for such respective programs, and (F) [**] does not have a good faith safety concern regarding the applicable additional development.

(b) Exceptions. Notwithstanding Section 3.6(a), a Party shall not have the right to exercise a deciding vote (i) in a manner that excuses such Party from any of its obligations specifically enumerated under this Agreement; (ii) in a manner that negates any consent rights or other rights specifically allocated to the other Party under this Agreement; (iii) in a manner that would require the other Party to perform activities that the other Party has not agreed to perform as set forth in this Agreement or the Research Plan, or as otherwise agreed in writing by the other Party; (iv) if such Party is Juno, in a manner that would increase or decrease the total number of FTEs to be devoted by Editas to the Research Project as set forth in the Research Plan, as modified in accordance with Section 2.4; (v) in a manner that would require a Party to perform any act that it reasonably believes to be inconsistent with any Law or any approval, order, policy, guidelines of a Competent Authority or ethical requirements or ethical guidelines; (vi) to allocate intellectual property rights; or (vii) to determine that such Party has fulfilled any obligation under this Agreement or that the other Party has breached any obligation under this Agreement. In the event that any matter set forth in the preceding clauses (i) through (vi) is unresolved through the JRC and subsequently such dispute cannot be resolved by the CEOs in accordance with Section 3.6(a), then (A) for all such matters set forth in the preceding clauses (iii) and (iv), there shall be no change in the Research Plan or associated budget unless the Parties otherwise mutually agree in writing, and (B) for all such matters set forth in the preceding clauses (i), (ii), (v) and (vi), either Party may require the specific issue to be referred to binding arbitration pursuant to Section 14.2. The Parties agree to share equally the cost of the proceedings, including fees of the panel members; provided, that each Party shall bear its own attorneys' fees and associated costs and expenses.

3.7 Limitations on JRC Authority. The JRC shall have only the powers assigned expressly to it in this ARTICLE III and elsewhere in this Agreement, and shall not have any power to amend, modify or waive compliance with this Agreement. Each Party shall retain the rights, powers and discretion granted to it under this Agreement and no such rights, powers or discretion shall be delegated or vested in the JRC unless such delegation or vesting of rights is expressly provided for in this Agreement or the Parties expressly so agree in writing.

ARTICLE 4
LICENSES

4.1 Research License to Editas. Subject to the terms and conditions of this Agreement, Juno hereby grants to Editas, and Editas hereby accepts, during the Research Program Term, a non-exclusive, worldwide, royalty-free, non-sublicensable license under the Juno IP and Juno Collaboration IP, solely to conduct activities assigned to Editas under the Research Plan. Notwithstanding the foregoing to the contrary, the license granted in this Section 4.1 does not include any right under the Juno IP and Juno Collaboration IP to create Engineered T-Cells that are not specified in the Research Plan.

4.2 Licenses to Juno.

(a) Research License. Subject to the terms and conditions of this Agreement, Editas hereby grants to Juno, and Juno hereby accepts, during the Research Program Term, a non-exclusive, worldwide, royalty-free, non-sublicensable license under the Editas IP and Editas Collaboration IP, solely to (i) conduct activities assigned to Juno under the Research Plan, (ii) conduct activities assigned to Editas under the Research Plan that Editas fails or refuses to conduct in a timely manner, (iii) use [**] Reagents to research, evaluate and conduct preclinical testing and Development of [**] Engineered T-Cells, [**] Engineered T-Cells and [**] Engineered T-Cells in the Field in the Territory, and (iv) evaluate the data developed in the conduct of activities under the Research Plan during the Research Program Term. Notwithstanding the foregoing to the contrary, the license granted in this Section 4.2(a) does not include any right under the Editas IP and Editas Collaboration IP to use Genome Editing Technology, except insofar as such use is specified in the Research Plan or agreed by Editas in writing in its sole discretion with specific reference to this Section 4.2(a).

(b) [**] Engineered T-Cell Product License to Juno. Subject to the terms and conditions of this Agreement, Editas hereby grants to Juno, and Juno hereby accepts an exclusive (even as to Editas), milestone and royalty-bearing license, including the right to grant sublicenses in accordance with Section 4.5, under the Editas IP, Editas Collaboration IP and Editas' interest in and to the Joint Collaboration IP to research (subject to Editas' retained rights to conduct research), Develop, make and have made, use, offer for sale, sell, import and export [**] Engineered T-Cell Products in the Exclusive Field in the Territory. Subject to the terms and conditions of this Agreement, Editas hereby grants to Juno, and Juno hereby accepts a non-exclusive, milestone and royalty-bearing license, including the right to grant sublicenses in accordance with Section 4.5 in connection with the grant of a sublicense under the exclusive license granted to Juno in accordance with this Section 4.2(b), under the Editas IP, Editas Collaboration IP and Editas' interest in and to the Joint Collaboration IP to use the Incorporated [**] Reagents associated with a [**] Engineered T-Cell Product to research, Develop, make and have made, use, offer for sale, sell, import and export a [**] Engineered T-Cell Product in the Non-Exclusive Field in the Territory. Notwithstanding the foregoing to the contrary, Juno will not (i) conduct research or Development of [**] Engineered T-Cells that would fall outside the scope of the license granted in Section 4.2(a) unless and until Juno has designated the applicable [**] Engineered T-Cell Target as a Final [**] Engineered T-Cell Target or (ii) progress a [**] Engineered T-Cell Product to an IND filing unless and until Juno has designated the applicable [**] Engineered Target as a Final [**] Engineered T-Cell Target. Further notwithstanding the

foregoing to the contrary, the licenses granted in this Section 4.2(b) do not include any right under the Editas IP, Editas Collaboration IP or Editas' interest in and to the Joint Collaboration IP to use Genome Editing Technology to make modifications or improvements to [**] Reagents used with the [**] Engineered T-Cells or [**] Engineered T-Cell Products, provided that such licenses will include rights to the [**] Engineered T-Cell Products that incorporate subsequent modifications and improvements that would otherwise fall within the scope of the relevant license granted in this Section 4.2(b) provided such subsequent modifications and improvements are not generated using the Genome Editing Technology.

(c) [**] Engineered T-Cell Product License to Juno. Subject to the terms and conditions of this Agreement, Editas hereby grants to Juno, and Juno hereby accepts an exclusive (even as to Editas), milestone and royalty-bearing license, including the right to grant sublicenses in accordance with Section 4.5, under the Editas IP, Editas Collaboration IP and Editas' interest in and to the Joint Collaboration IP to research (subject to Editas' retained rights to conduct research), Develop, make and have made, use, offer for sale, sell, import and export [**] Engineered T-Cell Products in the Exclusive Field in the Territory. Subject to the terms and conditions of this Agreement, Editas hereby grants to Juno, and Juno hereby accepts a non-exclusive, milestone and royalty-bearing license, including the right to grant sublicenses in accordance with Section 4.5 in connection with the grant of a sublicense under the exclusive license granted to Juno in accordance with this Section 4.2(c), under the Editas IP, Editas Collaboration IP and Editas' interest in and to the Joint Collaboration IP to use the Incorporated [**] Reagents associated with a [**] Engineered T-Cell Product to research, Develop, make and have made, use, offer for sale, sell, import and export a [**] Engineered T-Cell Product in the Non-Exclusive Field in the Territory. Notwithstanding the foregoing to the contrary, Juno will not (i) conduct research or Development of [**] Engineered T-Cells that would fall outside the scope of the license granted in Section 4.2(a) unless and until Juno has designated the applicable [**] Engineered T-Cell Target as a Final [**] Engineered T-Cell Target or (ii) progress a [**] Engineered T-Cell Product to an IND filing unless and until Juno has designated the applicable [**] Engineered Target as a Final [**] Engineered T-Cell Target. Further notwithstanding the foregoing to the contrary, the licenses granted in this Section 4.2(c) do not include any right under the Editas IP, Editas Collaboration IP or Editas' interest in and to the Joint Collaboration IP to use Genome Editing Technology to make modifications or improvements to [**] Reagents used with the [**] Engineered T-Cells or [**] Engineered T-Cell Products, provided that such licenses will include rights to the [**] Engineered T-Cell Products that incorporate subsequent modifications and improvements that would otherwise fall within the scope of the relevant license granted in this Section 4.2(c) provided such subsequent modifications and improvements are not generated using the Genome Editing Technology.

(d) [**] Engineered T-Cell Product License to Juno. Subject to the terms and conditions of this Agreement, Editas hereby grants to Juno, and Juno hereby accepts, a milestone- and royalty-bearing license, including the right to grant sublicenses in accordance with Section 4.5, under the Editas IP, Editas Collaboration IP and Editas' interest in and to the Joint Collaboration IP to use the [**] Reagents associated with the [**] Engineered T-Cell Product to research, Develop, make and have made, use, offer for sale, sell, import or export [**] Engineered T-Cell Products in the Exclusive Field and in the Territory. The foregoing license shall be exclusive (even as to Editas but subject to Editas' retained rights to conduct research) with respect to [**] Engineered T-Cell Products that contain an extracellular binding domain

targeting an Exclusive Protein Target and non-exclusive with respect to any other [**] Engineered T-Cell Products. Notwithstanding the foregoing to the contrary, Juno will not (i) conduct research or Development of [**] Engineered T-Cells that would fall outside the scope of the license granted in Section 4.2(a) unless and until Juno has designated the applicable [**] Engineered T-Cell Product pursuant to Section 2.7(d) or (ii) progress an [**] Engineered T-Cell Product to an IND filing unless and until Juno has designated the applicable [**] Engineered T-Cell Product pursuant to Section 2.7(d). Further notwithstanding the foregoing to the contrary, the licenses granted in this Section 4.2(d), do not include any right under the Editas IP, Editas Collaboration IP or Editas' interest in and to the Joint Collaboration IP to use Genome Editing Technology to make modifications or improvements to [**] Reagents used with the [**] Engineered T-Cells or [**] Engineered T-Cell Products, provided that such licenses will include rights to the [**] Engineered T-Cell Products that incorporate subsequent modifications and improvements that would otherwise fall within the scope of the relevant license granted in this Section 4.2(d) provided such subsequent modifications and improvements are not generated using the Genome Editing Technology.

4.3 Exclusivity.

(a) Genome Editing - Editas. During the Research Program Term, except to the extent required for Editas to fulfill its obligations under this Agreement, Editas shall not conduct or participate in, and shall not license, fund or otherwise actively enable any Third Party to conduct or participate in, any research, Development or commercialization activities involving the use of any Genome Editing Technology with respect to Engineered T-Cells for use in the Exclusive Field. During the Research Program Term, if Editas desires to enter into a collaboration, license or other relationship with a Third Party to utilize Genome Editing Technology with respect to Engineered T-Cells in the Non-Exclusive Field (a "Non-Exclusive Field Deal"), then Editas shall give Juno written notice in advance of entering into a Non-Exclusive Field Deal and shall provide Juno with a reasonable opportunity to discuss a collaboration, license or other relationship comparable to such Non-Exclusive Field Deal.

(b) Genome Editing – Juno.

(1) During the [**], except to the extent required for Juno to fulfill its obligations under this Agreement or exercise its rights under Section 4.2(a) of this Agreement, Juno shall not [**]. The foregoing shall not apply in the following circumstances: [**].

(2) During the Research Program Term after the [**], except to the extent required for Juno to fulfill its obligations or exercise its rights under this Agreement, Juno shall not [**].

(3) Notwithstanding subsections (1) and (2) above, Juno will not be restricted from [**].

(c) Gene Targets. During the Term, except to the extent required for Editas to fulfill its obligations under this Agreement, Editas shall not conduct or participate in, and shall not license, fund or otherwise actively enable any Third Party to conduct or participate in, any research, Development or commercialization activities utilizing Genome Editing Technology

with respect to the Final [**] Engineered T-Cell Targets or the Final [**] Engineered T-Cell Targets in the Exclusive Field. Notwithstanding the foregoing, Editas shall not be restricted from providing [**] Reagents to its Third Party collaborators and licensees for uses outside the Exclusive Field, provided that Editas shall include a restriction in any agreement with such a collaborator or licensee prohibiting the use of the [**] Reagents in the Exclusive Field.

(d) Exclusive Protein Targets. During the Term, except to the extent required for Editas to fulfill its obligations under this Agreement, Editas shall not conduct or participate in, and shall not license, fund or otherwise actively enable any Third Party to conduct or participate in, any research, Development or commercialization activities with respect to an [**] Engineered T-Cell that targets one or more Exclusive Protein Targets for use in the Exclusive Field.

4.4 Section 365(n) of the Bankruptcy Code. All rights and licenses granted under or pursuant to any section of this Agreement are and will otherwise be deemed to be for purposes of Section 365(n) of the United States Bankruptcy Code (Title 11, U.S. Code), as amended or any comparable law outside the United States (the "Bankruptcy Code"), licenses of rights to "intellectual property" as defined in Section 101(35A) of the Bankruptcy Code. Each Party agrees that the other Party, as licensee of such rights under this Agreement, will retain and may fully exercise all of its rights and elections under the Bankruptcy Code or any other provisions of applicable law outside the United States that provide similar protection for "intellectual property." The Parties further agree that, in the event of the commencement of a bankruptcy proceeding by or against a Party under the Bankruptcy Code or analogous provisions of applicable law outside the United States, the other Party will be entitled to a complete duplicate of (or complete access to, as appropriate) the intellectual property licensed to such other Party and all embodiments of such intellectual property, to the extent necessary for such other Party to practice the licenses granted to it pursuant to this Agreement under such intellectual property, which, if not already in such other Party's possession, will be promptly delivered to it upon such other Party's written request thereof. Any agreement supplemental hereto will be deemed to be "agreements supplementary to" this Agreement for purposes of Section 365(n) of the Bankruptcy Code.

4.5 Sublicenses. Juno shall have the right to grant sublicenses under the licenses granted to it under Sections 4.2(a), 4.2(b) 4.2(c) and 4.2(d) to Affiliates of Juno and Third Parties (each, a "Juno Sublicensee"); provided that any sublicense granted under this Agreement shall be pursuant to a written agreement that subjects such Juno Sublicensee to all relevant restrictions and limitations set forth in this Agreement. Juno shall provide Editas with the name and address of each Juno Sublicensee of its rights under this ARTICLE 4, the date of the grant of the sublicense and a description of the rights granted promptly after the execution and delivery of the sublicense agreement. Juno shall remain responsible for the performance of its Sublicensees, and shall ensure that each Sublicensee complies with the applicable terms and conditions of this Agreement. Notwithstanding the foregoing to the contrary, unless and until the receipt of written agreement by Institutions to permit further sublicensing, Juno shall not have the right to grant any sublicenses (other than to Affiliates of Juno and other than may be agreed in writing by Institutions, in each case subject to all restrictions on the granting of sublicenses herein). Notwithstanding the foregoing to the contrary, unless and until the receipt of written agreement by MGH to permit further sublicensing, Juno shall not have the right to grant any sublicenses (other than to Affiliates of Juno and other than may be agreed in writing by MGH, in each case subject to all restrictions

on the granting of sublicenses herein). Notwithstanding the foregoing to the contrary, for so long as the Editas IP includes Editas IP licensed by Editas from Duke, unless and until the receipt of written agreement by Duke to permit further sublicensing, Juno shall not have the right to grant any sublicenses (other than as may be agreed in writing by Duke, subject to all restrictions on the granting of sublicenses herein). All sublicenses granted by Juno hereunder, and any further sublicenses by a Juno Sublicensee shall comply with, and be subject and subordinate to, the terms and conditions of this Agreement. If Editas is unable to obtain the written agreement from the Institutions to allow for the further granting of sublicenses by Juno, then upon Juno's request at any time during the Term, Editas shall grant a direct license to any Third Party as Juno directs, as and to the extent permitted under Editas' obligations to the Institutions and MGH and provided such direct license is within the scope of Juno's licenses granted under Section 4.2.

4.6 Right to Subcontract. A Party may exercise any of the rights or obligations that such Party may have under this Agreement by subcontracting the exercise or performance of all or any portion of such rights and obligations on such Party's behalf to a contract service provider(s) without having to grant any sublicense or sublicenses to the applicable subcontractor(s), provided that (a) with respect to activities conducted under the Research Program, such Party complies with the provisions of Section 2.2(b), and (b) in all cases, such contract service provider(s) obtain(s) no rights in or to the other Party's IP. Any subcontract granted or entered into by a Party as contemplated by this Section 4.6 of the exercise or performance of all or any portion of the rights or obligations that such Party may have under this Agreement shall not relieve such Party from any of its obligations under this Agreement, and any act or omission by a subcontractor of a Party shall be deemed an act or omission by such Party hereunder, and a Party shall be responsible for each of its subcontractors complying with all obligations of such Party under this Agreement.

4.7 Rights Retained by the Parties. Except as expressly set forth in this Agreement, neither Party shall acquire any license or other intellectual property interest, by implication or otherwise, in any Confidential Information of the other Party or under any IP in which such other Party or its Affiliates has rights.

4.8 Compliance with In-Licenses. The terms of this Agreement, insofar as they relate to a sublicense of Editas IP licensed by Editas under an In-License Agreement shall be subject and subordinate to the terms and conditions of the relevant In-License Agreement.

ARTICLE 5
DEVELOPMENT AND COMMERCIALIZATION OF PRODUCTS; DILIGENCE

5.1 Responsibility. Except with respect to Editas' obligations under the Research Program, Juno shall have full responsibility, at its sole expense, for the worldwide research, Development, manufacturing and commercialization of the [**] Engineered T-Cell Products, [**] Engineered T-Cell Products, and [**] Engineered T-Cell Products in the Exclusive Field, subject to the payment obligations and other relevant terms and conditions of this Agreement.

5.2 Diligence.

5.2.1 Juno shall use Commercially Reasonable Efforts (itself or through Affiliates or Sublicensees) to research, Develop, manufacture and commercialize in the Exclusive Field and in each major market in the Territory at least [**].

5.2.2 In addition to the general diligence obligations set forth in Section 5.2.1:

(a) Juno shall have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary after the end of the Research Program Term, and shall have achieved [**] with respect to at least [**] with respect to another Final [**] Engineered T-Cell Target, on each [**] after the [**] anniversary of the Research Program Term until such time as [**].

(b) Juno shall have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary after the end of the Research Program Term, and shall have achieved [**] with respect to at least [**] with respect to another Final [**] Engineered T-Cell Target, on each [**] after the [**] anniversary of the Research Program Term until such time as [**].

(c) Juno shall have achieved [**] at least [**] no later than the [**] anniversary after the end of the Research Program Term.

5.2.3 If, for a [**] Engineered T-Cell Target, Juno is unable to satisfy the diligence requirement under Section 5.2.2(a) with respect to at least [**] with respect to such [**] Engineered T-Cell Target, then Juno will provide Editas with a written summary of Juno's efforts to achieve the applicable diligence requirement and upon Juno providing such summary the diligence requirement under Section 5.2.2(a) shall be extended by [**] on a one-time only basis (i.e., from the [**] anniversary [**] after the end of the Research Program Term). If Juno shall not have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary (or [**] if such date is extended in accordance with this Section 5.2.3) after the end of the Research Program Term, then Editas shall have the right, as its sole and exclusive remedy for Juno's failure, to convert the exclusive license granted under Section 4.2(b) with respect to all [**] Engineered T-Cell Products from exclusive to non-exclusive. If Juno shall have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary (or [**] if such date is extended in accordance with this Section 5.2.3) after the end of the Research Program Term, then for each other [**] Engineered T-Cell Target, if Juno is unable to satisfy the diligence requirement under Section 5.2.2(a) with respect to at least [**] with respect to such [**] Engineered T-Cell Target, then Editas shall have the right, as its sole and exclusive remedy for Juno's failure to achieve the diligence requirement under Section 5.2.2(a) with respect to such [**] Engineered T-Cell Target to convert the exclusive license granted under Section 4.2(b) with respect to the applicable [**] Engineered T-Cell Product from exclusive to non-exclusive. In the event of such failure, Juno shall notify Editas of the [**] Engineered T-Cell Target that is the subject of such failure. For the avoidance of doubt (a) if Juno shall not have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary (or [**] if such date is extended in accordance with this Section 5.2.3) after the end of the Research Program Term, then for any [**] Engineered T-Cell Products for which Juno achieved the obligation in Section 5.2.2(a) the license shall remain exclusive and

the conversion to non-exclusive shall only apply to the subsequent [**] Engineered T-Cell Products for which Juno failed to achieve the obligations in Section 5.2.2(a), and (b) nothing in this Section 5.2.3 shall modify or amend Juno's general diligence obligations under Section 5.2.1.

5.2.4 If, for a [**] Engineered T-Cell Target, Juno is unable to satisfy the diligence requirement under Section 5.2.2(b) with respect to at least [**] with respect to such [**] Engineered T-Cell Target, then Juno will provide Editas with a written summary of Juno's efforts to achieve the applicable diligence requirement and upon Juno providing such summary the diligence requirement under Section 5.2.2(b) shall be extended by [**] on a one-time only basis (i.e., from the [**] anniversary [**] after the end of the Research Program Term). If Juno shall not have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary (or [**] if such date is extended in accordance with this Section 5.2.4) after the end of the Research Program Term, then Editas shall have the right, as its sole and exclusive remedy for Juno's failure, to convert the exclusive license granted under Section 4.2(c) with respect to all [**] Engineered T-Cell Products from exclusive to non-exclusive. If Juno shall have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary (or [**] if such date is extended in accordance with this Section 5.2.4) after the end of the Research Program Term, then for each other [**] Engineered T-Cell Target, if Juno is unable to satisfy the diligence requirement under Section 5.2.2(b) with respect to at least [**] with respect to such [**] Engineered T-Cell Target, then Editas shall have the right, as its sole and exclusive remedy for Juno's failure to achieve the diligence requirement under Section 5.2.2(b) with respect to such [**] Engineered T-Cell Target to convert the exclusive license granted under Section 4.2(c) with respect to the applicable [**] Engineered T-Cell Product from exclusive to non-exclusive. In the event of such failure, Juno shall notify Editas of the [**] Engineered T-Cell Target that is the subject of such failure. For the avoidance of doubt (a) if Juno shall not have achieved [**] for at least [**] with respect to a Final [**] Engineered T-Cell Target no later than the [**] anniversary (or [**] if such date is extended in accordance with this Section 5.2.4) after the end of the Research Program Term, then for any [**] Engineered T-Cell Products for which Juno achieved the obligation in Section 5.2.2(b) the license shall remain exclusive and the non-exclusive shall only apply to the subsequent [**] Engineered T-Cell Products for which Juno failed to achieve the obligations in Section 5.2.2(b), and (b) nothing in this Section 5.2.4 shall modify or amend Juno's general diligence obligations under Section 5.2.1.

5.2.5 If Juno is unable to satisfy the diligence requirement under Section 5.2.2(c) with respect to at least [**], then Juno will provide Editas with a written summary of Juno's efforts to achieve such diligence requirement and upon Juno providing such summary the diligence requirement shall be extended by [**] on a one-time only basis (i.e., from the [**] anniversary [**] after the end of the Research Program Term). If Juno is unable to satisfy the extended diligence requirement with respect to at least [**], then Editas shall have the right, as its sole and exclusive remedy for Juno's failure to achieve the diligence requirement under Section 5.2.2(c) with respect to at least [**] to convert the exclusive license granted under Section 4.2(d) from exclusive to non-exclusive. For the avoidance of doubt, nothing in this Section 5.2.5 shall modify or amend Juno's general diligence obligations under Section 5.2.1.

5.3 Compliance with Law. Juno shall conduct all activities in connection with the exercise by it of the rights and licenses granted to it in ARTICLE 4 in accordance with all applicable Laws. Juno hereby certifies that it will not employ or otherwise use in any capacity in performing any

activity hereunder the services of any Person known to it to be debarred under 21 USC §335a. Without limiting the generality of the foregoing, Juno represents and warrants that it shall comply, and shall ensure that its Affiliates and Juno Sublicensees comply, with all local, state, federal and international laws and regulations applicable to the development, manufacture, use, sale, performance and importation of Licensed Products. Without limiting the foregoing, Juno represents and warrants, on behalf of itself and its Affiliates and Juno Sublicensees, that it shall comply with all applicable United States laws and regulations controlling the export of certain commodities and technical data, including without limitation all Export Administration Regulations of the United States Department of Commerce. Among other things, these laws and regulations prohibit or require a license for the export of certain types of commodities and technical data to specified countries. Juno hereby gives written assurance that it shall comply with, and shall cause its Affiliates to comply with (and shall contractually obligate its Affiliates and Juno Sublicensees to comply with), all applicable United States export control laws and regulations, that it bears sole responsibility for any violation of such laws and regulations by itself or its Affiliates or Juno Sublicensees, and that it shall indemnify, defend, and hold Editas Indemnitees, Institution Indemnitees, MGH Indemnitees, MIT Indemnitees and HHMI Indemnitees harmless (in accordance with Article 12) for the consequences of any such violation.

5.4 Patent Numbers. Juno shall cause all Licensed Products sold in the United States to be marked with all applicable U.S. Patent Numbers, to the full extent required by United States law. Juno shall similarly cause all Licensed Products shipped to or sold in any other country to be marked in such a manner as to conform with the patent laws and practices of such country.

5.5 Progress and Other Reports. After the end of the Research Program Term and continuing until the first commercial sale of each of a [**] Engineered T-Cell Product, [**] Engineered T-Cell Product and [**] Engineered T-Cell Product in the Territory, Juno shall provide, within [**] days after the end of each [**], a written progress report to Editas that summarizes the activities undertaken and the status of Juno's development efforts with respect to a [**] Engineered T-Cell Product, [**] Engineered T-Cell Product and [**] Engineered T-Cell Product during such [**]. Juno agrees to provide Editas with such additional information as Editas may reasonably request, at such times as Editas may reasonably request, in order for Editas to comply with the terms of an In-License Agreement (subject to Section 4.8).

5.6 Insurance.

5.6.1 Prior to the first dose of a human with any Licensed Product and extending through the last date on which such Licensed Product is being developed, distributed or sold by Juno, or by an Affiliate of Juno, Juno Sublicensee or agent of Juno, Juno shall, at its sole cost and expense, procure and maintain commercial general liability insurance in amounts not less than $[**] and naming Editas, Institution Indemnitees, HHMI Indemnitees, Duke Indemnitees (for so long as the Editas IP includes Editas IP licensed by Editas from Duke) and each such other In-Licensor (and its In-Licensor Indemnitees) that Editas names in a written notice to Juno, as additional insureds. During clinical trials of any Licensed Product, Juno shall, at its sole cost and expense, procure and maintain commercial general liability insurance in such equal or lesser amount as Institutions, MIT and HHMI shall require, naming the Institution Indemnitees and HHMI Indemnitees as additional insureds. If Duke (for so long as the Editas IP includes Editas IP licensed by Editas from Duke) determines that the amounts set forth above in this Section 5.6.1

are not reasonably sufficient to protect against liability under Section 12.1.6, Juno shall, at its sole cost and expense, procure and maintain commercial general liability insurance in such greater amount as Duke shall require. Such commercial general liability insurance shall provide: (a) product liability coverage and (b) broad form contractual liability coverage for Juno's indemnification obligations under this Agreement.

5.6.2 If Juno elects to self-insure all or part of the limits described above in Section 5.5.1 (including deductibles or retentions that are in excess of $[**] annual aggregate) such self-insurance program must be acceptable to Editas, Institutions, MIT, MGH and their respective insurers (which, in the case of MGH, shall include the Risk Management Foundation) in their sole discretion. The minimum amounts of insurance coverage required shall not be construed to create a limit of Juno's liability with respect to its indemnification obligations under this Agreement.

5.6.3 Juno shall provide Editas with written evidence of such insurance upon request of Editas, and shall provide an Institution, MGH or Duke (for so long as the Editas IP includes Editas IP licensed by Editas from Duke) with written evidence of such insurance upon request of such Institution, MGH or Duke, as applicable. Juno shall provide Editas with written notice at least [**] days prior to the cancellation, non-renewal or material change in such insurance. If Juno does not obtain replacement insurance providing comparable coverage within such [**] day period, Editas shall have the right to terminate this Agreement effective at the end of such [**] day period without notice or any additional waiting periods.

5.6.4 Juno shall maintain such commercial general liability insurance beyond the expiration or termination of this Agreement during: (a) the period that any Licensed Product is being commercially distributed or sold by Juno, or an Affiliate of Juno, Juno Sublicensee or agent of Juno; and (b) a reasonable period after the period referred to in (a) above which in no event shall be less than [**] years.

ARTICLE 6
PAYMENTS

6.1 Initial Fee. In partial consideration of Editas' grant of the rights and licenses to Juno hereunder, Juno shall pay to Editas an upfront fee of twenty-five million dollars ($25,000,000) within [**] days following the Effective Date.

6.2 Research Program Funding. Juno shall make the following payments to Editas for the research to be conducted under the Research Program: (a) within [**] days after the first day of each [**] month period during the Research Program Term, an amount equal to [**] FTEs, or such other number of FTEs to be devoted by Editas to the conduct of the Research Program and paid for by Juno during such [**] month period as the Parties may have agreed and provided in the Research Plan, as such number may have been increased or decreased in accordance with Section 2.4, multiplied by the FTE Rate; and (b) the costs of one-time specialized reagents, the identity and costs for which are as identified in the Research Plan, not to exceed [**] dollars ($[**]) unless otherwise agreed by the Parties and provided in the Research Plan, within [**] days after presentation of an invoice therefor. In the event that the number of FTEs devoted by Editas to the conduct of the Research Program is adjusted in accordance with Section 2.4 during any [**] month

period during the Research Program Term so that such number is more or less than the forecasted number of FTEs on which Juno's payment for such [**] month period was based under Section 6.2(a), then the following shall apply: (1) in the event such number is less than the forecasted number and results in an overpayment by Juno, Juno may deduct the amount of such overpayment from any future amounts payable to Editas under Section 6.2(a), provided that if no further payments are due under Section 6.2(a), Editas shall refund such overpayment within [**] days after presentation of an invoice therefor; and (2) in the event such number is more than the forecasted number and results in an underpayment by Juno, Juno shall pay such additional amounts to cure such underpayment within [**] days after presentation of an invoice therefor.

6.3 Extension Fee. If Juno and Editas agree to extend the Research Program Term in accordance with Section 2.5, then Juno shall pay to Editas an extension fee of [**] dollars ($[**]) for each one (1) year extension, payable prior to the end of the then-current Research Program Term.

6.4 Additional Gene Target Fees.

(a) For each Final [**] Engineered T-Cell Target beyond [**] that is designated by Juno pursuant to Section 2.7(a), Juno shall pay to Editas an additional [**] Engineered T-Cell Target fee of [**] dollars ($[**]) (the "Additional [**] Target Fee"), payable within [**] days after Juno so designates such [**] Engineered T-Cell Target.

(b) For each Final [**] Engineered T-Cell Target beyond [**] that is designated by Juno pursuant to Section 2.7(b), Juno shall pay to Editas an additional [**] Engineered T-Cell Target fee of [**] dollars ($[**]) (the "Additional [**] Target Fee"), payable within [**] days after Juno so designates such [**] Engineered T-Cell Target.

6.5 Milestones.

(a) [**] Engineered T-Cell Products. Juno shall notify Editas in writing of any milestone event set forth below in this Section 6.5(a) with respect to [**] Engineered T-Cell Products and pay Editas the following payments on the achievement by Juno of the following milestone events, with such payments due within [**] days after applicable event occurs. The Parties intend that for each Class of [**] Engineered T-Cell Product that differs from another Class of [**] Engineered T-Cell Product on the basis of clause (a) of Section 1.15, a Milestone Payment shall be due upon achievement of First [**] Acceptance, First patient enrolled in the first [**]Trial, First [**] filing with the [**] (as defined below), First [**] filing with the [**] (as defined below), First [**] from the [**] and First [**] from the [**]. The Parties also intend that for each Class of [**] Engineered T-Cell Product that differs from another Class of [**] Engineered T-Cell Product on the basis of clause (b) of Section 1.15, a Milestone Payment shall be due upon achievement of First [**] filing with the [**], First [**]filing with the [**], First [**] from the [**] and First [**] from the [**]. The tables below shall be interpreted in a manner consistent with such intentions. For further clarity, upon the achievement of First [**] filing with the [**], First [**] filing with the [**], First [**] from the [**] or First [**] from the [**] with respect to any [**] Engineered T-Cell Product, the applicable Milestone Payment shall be determined by consulting the tables below in the order presented in order to determine which

Milestone Event shall be deemed to have occurred and which Milestone Payment shall be due as a result.

A. FIRST ACHIEVEMENT MILESTONE EVENTS

Each Milestone Payment set forth in the table immediately below shall be payable only once. With respect to Milestone Events A.2, A.3, A.4, A.5, A.6 and A.7 below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(a); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event A.2, A.3, A.4, A.5, A.6 or A.7, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(a). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events A.4 and A.6 shall not be deemed to have occurred upon the occurrence of Milestone Event A.5 or Milestone Event A.7, and Milestone Event A.5 shall not be deemed to have occurred upon the occurrence of Milestone Event A.6.

Milestone Event	**Milestone Payment**
1. First Successful [**] Achievement (as defined below)	[**]
2. First [**] Acceptance for a [**] Engineered T-Cell Product	[**]
3. First patient enrolled in the first [**] Trial of a [**] Engineered T-Cell Product	[**]
4. First [**] filing with the [**] for a [**] Engineered T-Cell Product	[**]
5. First [**] filing with the [**] for a [**] Engineered T-Cell Product	[**]
6. First [**] from the [**] for a [**] Engineered T-Cell Product	[**]
7. First [**] from the [**] for a [**] Engineered T-Cell Product	[**]
TOTAL	$157,500,000

For purposes of the portions of this Section 6.5(a) that follow below, the [**] Engineered T-Cell Product that first achieves the Milestone Event A.3 above, "First patient enrolled in the first [**] Trial of a [**] Engineered T-Cell Product," shall be referred to as the "First Class of [**] Engineered T-Cell Product." If the First Class of [**] Engineered T-Cell Product is not the [**]Engineered T-Cell Product that first achieves the Milestone Event A.4, A.5, A.6 or A.7

above, then the First Class of [**] Engineered T-Cell Product shall be subject to the Milestone Event and Milestone Payment set forth in the table below under D.3, D.4, D.5 or D.6 that corresponds to the Milestone Event A.4, A.5, A.6 or A.7 above, as applicable.

B. FIRST NEW CLASS BASED ON PROTEIN TARGET

Each Milestone Payment set forth in the table immediately below shall be payable only once. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of the Milestone Event A.4 above on the basis of clause (b) of Section 1.15 and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(a); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event B.1, B.2, B.3 or B.4, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(a). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events B.1 and B.3 shall not be deemed to have occurred upon the occurrence of Milestone Event B.2 or Milestone Event B.4, and Milestone Event B.2 shall not be deemed to have occurred upon the occurrence of Milestone Event B.3.

Milestone Event	Milestone Payment
1. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
2. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
3. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**]	[**]

Milestone Event	Milestone Payment
Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	
4. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
TOTAL	$75,000,000 or $55,000,000 if both of the provisos above are applicable

C. ADDITIONAL CLASSES BASED ON PROTEIN TARGET

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above and from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event B.1 above on the basis of clause (b) of Section 1.15 and that is not the subject of the corresponding Milestone Event in table B above. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events C.1 and C.3 shall not be deemed to have occurred upon the occurrence of Milestone Event C.2 or Milestone Event C.4, and Milestone Event C.2 shall not be deemed to have occurred upon the occurrence of Milestone Event C.3.

Milestone Event	Milestone Payment
1. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
2. First [**] filing with the [**] (as defined below) for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the	[**]

Milestone Event	Milestone Payment
subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.2 above	
3. First [**] from the [**] for a for a Class of [**]Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.3 above	[**]
4. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.4 above	[**]
TOTAL	$50,000,000

D. NEW CLASS BASED ON GENE TARGET

Each Milestone Payment set forth below shall be payable once per Class of [**] Engineered T-Cell Product, with such Class determined on the basis of clause (a) of Section 1.15.

Milestone Event	Milestone Payment
1. First [**] Acceptance for a [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.2 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
2. First patient enrolled in the first [**] Trial of a [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.2 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement	[**]

Milestone Event	Milestone Payment
of this Milestone Event on the basis of clause (a) of Section 1.15	
TOTAL	$15,000,000

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table or the table immediately above that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events D.3 and D.5 shall not be deemed to have occurred upon the occurrence of Milestone Event D.4 or Milestone Event D.6, and Milestone Event D.4. shall not be deemed to have occurred upon the occurrence of Milestone Event D.5.

Milestone Event	Milestone Payment
3. First [**] filing with the [**] for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
4. First [**] filing with the [**] (as defined below) for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
5. First [**] from the [**] for a for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
6. First [**] from the [**] for a for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-	[**]

Milestone Event	Milestone Payment
Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	
TOTAL	$87,500,000

Each Milestone Payment set forth below shall be payable once with respect to a particular Class of [**] Engineered T-Cell Product. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of the Milestone Event D.3 above on the basis of clause (b) of Section 1.15 and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(a); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event D.7, D.8, D.9 or D.10, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(a). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events D.7 and D.9 shall not be deemed to have occurred upon the occurrence of Milestone Event D.8 or Milestone Event D.10, and Milestone Event D.8 shall not be deemed to have occurred upon the occurrence of Milestone Event D.9.

Milestone Event	Milestone Payment
7. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
8. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
9. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of	[**]

Milestone Event	Milestone Payment
Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	
10. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
TOTAL	$55,000,000 or $75,000,000 if both of the provisos above are applicable

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above and from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.7 above on the basis of clause (b) of Section 1.15 and that is not the subject of the corresponding Milestone Event set forth in D.7 to D.10 above. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events D.11 and D.13 shall not be deemed to have occurred upon the occurrence of Milestone Event D.12 or Milestone Event D.14, and Milestone Event D.12 shall not be deemed to have occurred upon the occurrence of Milestone Event D.13.

Milestone Event	Milestone Payment
11. First [**] filing with the [**] for a subsequent Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
12. First [**] filing with the [**] (as defined below) for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7	[**]

Milestone Event	Milestone Payment
above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target and is not subject to Milestone Event D.8 above	
13. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target and is not subject to Milestone Event D.9 above	[**]
14. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target and is not subject to Milestone Event D.10 above	[**]
TOTAL	$50,000,000

E. COMMERCIAL SALES MILESTONES

Each Milestone Payment set forth below shall be payable once for all [**] Engineered T-Cell Products aggregated across all Classes determined on the basis of Section 1.15.

Milestone Event	Milestone Payment
1. The first time in which worldwide, aggregate Net Sales in a calendar year of [**] Engineered T-Cell Products exceeds $[**]	[**]
2. The first time in which worldwide, aggregate Net Sales in a calendar year of [**] Engineered T-Cell Products exceeds $[**]	[**]

(b) [**] Engineered T-Cell Products. Juno shall notify Editas in writing of any milestone event set forth below in this Section 6.5(b) with respect to [**] Engineered T-Cell Products and pay Editas the following payments on the achievement by Juno of the following milestone events, with such payments due within [**] days after applicable event occurs. The Parties intend that for each Class of [**] Engineered T-Cell Product that differs from another

Class of [**] Engineered T-Cell Product on the basis of clause (a) of Section 1.15, a Milestone Payment shall be due upon achievement of First [**] Acceptance, First patient enrolled in the first [**] Trial, First [**] filing with the [**] (as defined below), First [**] filing with the [**] (as defined below), First [**] from the [**] and First [**] from the [**]. The Parties also intend that for each Class of [**] Engineered T-Cell Product that differs from another Class of [**] Engineered T-Cell Product on the basis of clause (b) of Section 1.15, a Milestone Payment shall be due upon achievement of First [**] filing with the [**], First [**] filing with the [**], First [**] from the [**] and First [**] from the [**]. The tables below shall be interpreted in a manner consistent with such intentions. For further clarity, upon the achievement of First [**] filing with the [**], First [**] filing with the [**], First [**] from the [**] or First [**] from the [**] with respect to any [**] Engineered T-Cell Product, the applicable Milestone Payment shall be determined by consulting the tables below in the order presented in order to determine which Milestone Event shall be deemed to have occurred and which Milestone Payment shall be due as a result.

A. FIRST ACHIEVEMENT MILESTONE EVENTS

Each Milestone Payment set forth in the table immediately below shall be payable only once. With respect to Milestone Events A.2, A.3, A.4, A.5, A.6 and A.7 below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(b); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event A.2, A.3, A.4, A.5, A.6 or A.7, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(b). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events A.4 and A.6 shall not be deemed to have occurred upon the occurrence of Milestone Event A.5 or Milestone Event A.7, and Milestone Event A.5 shall not be deemed to have occurred upon the occurrence of Milestone Event A.6.

Milestone Event	Milestone Payment
1. First Successful [**] Achievement (as defined below)	[**]
2. First [**] Acceptance for a [**] Engineered T-Cell Product	[**]
3. First patient enrolled in the first [**] Trial of a [**] Engineered T-Cell Product	[**]
4. First [**] filing with the [**] for a [**] Engineered T-Cell Product	[**]

Milestone Event	Milestone Payment
5. First [**] filing with the [**] for a [**] Engineered T-Cell Product	[**]
6. First [**] from the [**] for a [**] Engineered T-Cell Product	[**]
7. First [**] from the [**] for a [**] Engineered T-Cell Product	[**]
TOTAL	$157,500,000

For purposes of the portions of this Section 6.5(b) that follow below, the [**] Engineered T-Cell Product that first achieves the Milestone Event A.3 above, "First patient enrolled in the first [**] Trial of a [**] Engineered T-Cell Product," shall be referred to as the "First Class of [**] Engineered T-Cell Product." If the First Class of [**] Engineered T-Cell Product is not the [**] Engineered T-Cell Product that first achieves the Milestone Event A.4, A.5, A.6 or A.7 above, then the First Class of [**] Engineered T-Cell Product shall be subject to the Milestone Event and Milestone Payment set forth in the table below under D.3, D.4, D.5 or D.6 that corresponds to the Milestone Event A.4, A.5, A.6 or A.7 above, as applicable.

B. FIRST NEW CLASS BASED ON PROTEIN TARGET

Each Milestone Payment set forth in the table immediately below shall be payable only once. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of the Milestone Event A.4 above on the basis of clause (b) of Section 1.15 and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(b); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event B.1, B.2, B.3 or B.4, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(b). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events B.1 and B.3 shall not be deemed to have occurred upon the occurrence of Milestone Event B.2 or Milestone Event B.4, and Milestone Event B.2 shall not be deemed to have occurred upon the occurrence of Milestone Event B.3.

Milestone Event	Milestone Payment
1. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of	[**]

Milestone Event	Milestone Payment
Milestone Event A.4 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	
2. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
3. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
4. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
TOTAL	$75,000,000 or $55,000,000 if both of the provisos above are applicable

C. ADDITIONAL CLASSES BASED ON PROTEIN TARGET

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above and from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event B.1 above on the basis of clause (b) of Section 1.15 and that is not the subject of the corresponding Milestone Event in table B above. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events C.1 and C.3 shall not be deemed to have occurred upon the occurrence of Milestone Event C.2 or Milestone Event

C.4, and Milestone Event C.2 shall not be deemed to have occurred upon the occurrence of Milestone Event C.3.

Milestone Event	Milestone Payment
1. First [**] filing with the [**] for a Class of [**]Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
2. First [**] filing with the [**] (as defined below) for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.2 above	[**]
3. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.3 above	[**]
4. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.4 above	[**]
TOTAL	$50,000,000

D. NEW CLASS BASED ON GENE TARGET

Each Milestone Payment set forth below shall be payable once per Class of [**] Engineered T-Cell Product, with such Class determined on the basis of clause (a) of Section 1.15.

Milestone Event	Milestone Payment
1. First [**] Acceptance for a [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.2 above on the basis of clause (a) of Section 1.15 and from the Class of [**]Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
2. First patient enrolled in the first [**] Trial of a [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.2 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
TOTAL	$15,000,000

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table or the table immediately above that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events D.3 and D.5 shall not be deemed to have occurred upon the occurrence of Milestone Event D.4 or Milestone Event D.6, and Milestone Event D.4 shall not be deemed to have occurred upon the occurrence of Milestone Event D.5.

Milestone Event	Milestone Payment
3. First [**] filing with the [**] for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
4. First [**] filing with the [**] (as defined below) for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]

Milestone Event	Milestone Payment
5. First [**] from the [**] for a for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
6. First [**] from the [**] for a for each [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (a) of Section 1.15 and from the Class of [**] Engineered T-Cell Product that was the subject of a prior achievement of this Milestone Event on the basis of clause (a) of Section 1.15	[**]
TOTAL	$87,500,000

Each Milestone Payment set forth below shall be payable once with respect to a particular Class of [**] Engineered T-Cell Product. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of the Milestone Event D.3 above on the basis of clause (b) of Section 1.15 and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(b); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event D.7, D.8, D.9 or D.10, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(b). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events D.7 and D.9 shall not be deemed to have occurred upon the occurrence of Milestone Event D.8 or Milestone Event D.10, and Milestone Event D.8 shall not be deemed to have occurred upon the occurrence of Milestone Event D.9.

Milestone Event	Milestone Payment
7. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**]	[**]

Milestone Event	Milestone Payment
Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	
8. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
9. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
10. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
TOTAL	$55,000,000 or $75,000,000 if both of the provisos above are applicable

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above and from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.7 above on the basis of clause (b) of Section 1.15 and that is not the subject of the corresponding Milestone Event set forth in D.7 to D.10 above. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events D.11 and D.13 shall not be deemed to have occurred upon the occurrence of Milestone Event D.12 or Milestone Event D.14, and Milestone Event D.12 shall not be deemed to have occurred upon the occurrence of Milestone Event D.13.

Milestone Event	Milestone Payment
11. First [**] filing with the [**] for a subsequent Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target	[**]
12. First [**] filing with the [**] (as defined below) for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target and is not subject to Milestone Event D.8 above	[**]
13. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target and is not subject to Milestone Event D.9 above	[**]
14. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 and Milestone Event D.7 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event D.3 above on the basis of Gene Target and is not subject to Milestone Event D.10 above	[**]
TOTAL	$50,000,000

E. COMMERCIAL SALES MILESTONES

Each Milestone Payment set forth below shall be payable once for all [**] Engineered T-Cell Products aggregated across all Classes determined on the basis of Section 1.15.

Milestone Event	Milestone Payment
1. The first time in which worldwide, aggregate Net Sales in a calendar year of [**] Engineered T-Cell Products exceeds $[**]	[**]
2. The first time in which worldwide, aggregate Net Sales in a calendar year of [**] Engineered T-Cell Products exceeds $[**]	[**]

(c) [**] Engineered T-Cell Products. Juno shall notify Editas in writing of any milestone event set forth below in this Section 6.5(c) with respect to [**] Engineered T-Cell Products and pay Editas the following payments on the achievement by Juno of the following milestone events, with such payments due within [**] days after applicable event occurs. The Parties intend that for each Class of [**] Engineered T-Cell Product that differs from another Class of [**] Engineered T-Cell Product on the basis of clause (b) of Section 1.15, a Milestone Payment shall be due upon achievement of First [**] Acceptance, First patient enrolled in the first [**] Trial, First [**] filing with the [**] (as defined below), First [**] filing with the [**] (as defined below), First [**] from the [**] and First [**] from the [**]. The tables below shall be interpreted in a manner consistent with such intentions. For further clarity, upon the achievement of First [**] filing with the [**], First [**] filing with the [**], First [**] from the [**] or First [**] from the [**] with respect to any [**] Engineered T-Cell Product, the applicable Milestone Payment shall be determined by consulting the tables below in the order presented in order to determine which Milestone Event shall be deemed to have occurred and which Milestone Payment shall be due as a result.

A. FIRST ACHIEVEMENT MILESTONE EVENTS

Each Milestone Payment set forth in the table immediately below shall be payable only once. With respect to Milestone Events A.2, A.3, A.4, A.5, A.6 and A.7 below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(c); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event A.2, A.3, A.4, A.5, A.6 or A.7, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(c). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events A.4 and A.6 shall not be deemed to have occurred upon the occurrence of Milestone Event A.5 or Milestone Event A.7, and Milestone Event A.5 shall not be deemed to have occurred upon the occurrence of Milestone Event A.6.

Milestone Event	Milestone Payment
1. First Successful [**] Achievement (as defined below)	[**]
2. First [**] Acceptance for an [**] Engineered T-Cell Product	[**]
3. First patient enrolled in the first [**] Trial of an [**] Engineered T-Cell Product	[**]
4. First [**] filing with the [**] for an [**] Engineered T-Cell Product	[**]
5. First [**] filing with the [**] for an [**] Engineered T-Cell Product	[**]
6. First [**] from the [**] for an [**] Engineered T-Cell Product	[**]
7. First [**] from the [**] for an [**] Engineered T-Cell Product	[**]
TOTAL	$157,500,000

For purposes of the portions of this Section 6.5(c) that follow below, the [**] Engineered T-Cell Product that first achieves the Milestone Event A.3 above, "First patient enrolled in the first [**] Trial of an [**] Engineered T-Cell Product," shall be referred to as the "First Class of [**] Engineered T-Cell Product." If the First Class of [**] Engineered T-Cell Product is not the [**] Engineered T-Cell Product that first achieves the Milestone Event A.4, A.5, A.6 or A.7 above, then the First Class of [**] Engineered T-Cell Product shall be subject to the Milestone Event and Milestone Payment set forth in the table below under D.3, D.4, D.5 or D.6 that corresponds to the Milestone Event A.4, A.5, A.6 or A.7 above, as applicable.

B. FIRST NEW CLASS BASED ON PROTEIN TARGET

Each Milestone Payment set forth in the table immediately below shall be payable only once. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of the Milestone Event A.4 above on the basis of clause (b) of Section 1.15 and achievement of such Milestone Event and payment of the corresponding Milestone Payment shall not preclude achievement of the Milestone Events and payment of the Milestone Payments set forth in the additional tables below in this Section 6.5(c); provided, however, that with respect to a particular [**] Engineered T-Cell Product, if a Milestone Payment has been made with respect to achievement of Milestone Event B.1, B.2, B.3 or B.4, no Milestone Payment shall be due with respect to the identical [**] Engineered T-Cell Product upon achievement of the corresponding Milestone Event set forth in the additional tables below in this Section 6.5(c). In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events B.1 and B.3 shall

not be deemed to have occurred upon the occurrence of Milestone Event B.2 or Milestone Event B.4, and Milestone Event B.2 shall not be deemed to have occurred upon the occurrence of Milestone Event B.3.

Milestone Event	Milestone Payment
1. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
2. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
3. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
4. First [**] from the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
TOTAL	$75,000,000

C. ADDITIONAL CLASSES BASED ON PROTEIN TARGET

The Milestone Payments set forth below shall be payable upon each achievement of the Milestone Events set forth below, no matter how many times such Milestone Events are achieved. With respect to the Milestone Events below, such Milestone Events refer to the first time achievement by any [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above and from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event B.1 above on the basis of clause (b) of Section 1.15 and that is not the subject of the corresponding Milestone Event in table B above. In the event a Milestone Event set forth in the table below occurs, all prior Milestone Events set forth in such table that have not occurred shall be deemed to have occurred, and any Milestone Payment(s) associated with such prior Milestone Events that have

not previously been paid shall be due and payable with the Milestone Payment associated with the Milestone Event that occurred; provided, however, that Milestone Events C.1 and C.3 shall not be deemed to have occurred upon the occurrence of Milestone Event C.2 or Milestone Event C.4, and Milestone Event C.2 shall not be deemed to have occurred upon the occurrence of Milestone Event C.3.

Milestone Event	Milestone Payment
1. First [**] filing with the [**] for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target	[**]
2. First [**] filing with the [**] (as defined below) for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.2 above	[**]
3. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.3 above	[**]
4. First [**] from the [**] for a for a Class of [**] Engineered T-Cell Product that differs from the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 and Milestone Event B.1 above on the basis of clause (b) of Section 1.15 but is the same Class as the Class of [**] Engineered T-Cell Product that was the subject of Milestone Event A.4 above on the basis of Gene Target and is not subject to Milestone Event B.4 above	[**]
TOTAL	$50,000,000

D. COMMERCIAL SALES MILESTONES

Each Milestone Payment set forth below shall be payable once for all [**] Engineered T-Cell Products aggregated across all Classes determined on the basis of Section 1.15.

Milestone Event	Milestone Payment
1. The first time in which worldwide, aggregate Net Sales in a calendar year of [**] Engineered T-Cell Products exceeds $[**]	[**]
2. The first time in which worldwide, aggregate Net Sales in a calendar year of [**] Engineered T-Cell Products exceeds $[**]	[**]

(d) Payments. With respect to a particular Licensed Product and an event that triggers a milestone payment under more than one provision of Section 6.5(a), Section 6.5(b) and/or Section 6.5(c), only the highest such milestone payment shall be due for such Product with respect to such event regardless of whether such event may result in triggering more than one milestone payment. By way of example, if a Licensed Product that incorporates [**] Reagents that are directed against both a Final [**] Engineered T-Cell Target and a Final [**] Engineered T-Cell Target achieves a [**] for such Licensed Product then only the one highest applicable milestone payment under either Section 6.5(a) or Section 6.5(b) would be due for such Licensed Product (and not two payments under both Section 6.5(a) and Section 6.5(b)).

(e) Certain Definitions.

As used in this Section 6.5, "Successful [**] Achievement" means that a [**].

As used in this Section 6.5, [**] means the first of [**].

As used in this Section 6.5,[**] means the [**].

6.6 Royalties.

(a) Juno shall pay to Editas royalties, with respect to Net Sales of each Licensed Product, equal to the following: (A) for each Licensed Product that is a [**] Engineered T-Cell Product, [**] Engineered T-Cell Product or [**] Engineered T-Cell Product, but is not more than one of the foregoing: (i) [**] percent ([**]%) of the first [**] dollars ($[**]) of annual, aggregate, worldwide Net Sales of such Licensed Product, (ii) [**] percent ([**]%) of annual, aggregate, worldwide Net Sales of such Licensed Product greater than [**] dollars ($[**]) but less than [**] dollars ($[**]), and (iii) [**] percent ([**]%) of annual, aggregate, worldwide Net Sales of such Licensed Product equal to and greater than [**] dollars ($[**]); and (B) for each Licensed Product is more than one of a [**] Engineered T-Cell Product, [**] Engineered T-Cell Product and [**] Engineered T-Cell Product: (i) [**] percent ([**]%) of the first [**] dollars ($[**]) of annual, aggregate, worldwide Net Sales of such Licensed Product, (ii) [**] percent ([**]%) of annual, aggregate, worldwide Net Sales of such Licensed Product greater than [**] million dollars ($[**]) but less than [**] dollars ($[**]), and (iii) [**] percent ([**]%) of annual, aggregate, worldwide Net Sales of such Licensed Product equal to and greater than [**] dollars ($[**]).

(b) Royalties payable under this Section 6.6 shall be paid on a Licensed Product-by-Licensed Product and country-by-country basis from the date of the first commercial sale of each Product in a country until the later of (i) the tenth (10th) anniversary of the first commercial sale of such Licensed Product in such country and (ii) the expiration date in such country of the last to expire Valid Claim within the Editas IP, the Editas Collaboration IP or the Joint Collaboration IP covering the manufacture, use or sale of such Licensed Product in such country. Only one royalty shall be paid to Editas with respect to a particular Licensed Product subject to royalties under this Section 6.6, without regard to whether more than one Valid Claim covers the manufacture, use or sale of such Product.

(c) If Juno is legally required by a future court order, settlement agreement, contract, or other legally binding written commitment (the "Third Party Royalty Agreement") to make payments to a Third Party(ies) of running royalties on net sales of a Licensed Product for a license under a valid claim(s) of a pending patent application and/or issued patent(s) by such Third Party(ies) that claims the [**] Reagent used in the manufacture of such Licensed Product as generated and delivered by Editas under the Research Program (or generated by Juno in accordance with Section 4.2(a)), or the manufacture or use of such [**] Reagent as a genome editing construct, then the terms of this Section 6.6(c) shall apply. For purposes hereof, [**] percent ([**]%) of the amount actually paid (up to a maximum deduction of [**]% of Net Sales) to such Third Party(ies) on Net Sales of such Licensed Product shall be referred to as the "Allowable Offset Payment." Concurrently with the execution of the Third Party Royalty Agreement, the Parties will enter into an amendment to this Agreement to provide (1) for the grant of a sublicense from Juno to Editas under the applicable Third Party Royalty Agreement, with respect to the composition, manufacture or use of the [**] Reagent (unless Editas in good faith believes that such a sublicense is legally or contractually prohibited to Editas or would expose Editas to additional payments to the applicable Third Party that are not related to this Agreement and provided for in this Section 6.6(c)), (2) for the grant of a full sublicense to Juno from Editas of the rights granted by Juno under clause (1), and (3) that Editas will either make such Allowable Offset Payment to Juno or directly to the Third Party that is party to the Third Party Royalty Agreement. If the Parties do not enter into such an amendment to this Agreement, Juno shall be entitled to credit the Allowable Offset Payment against the royalties due to Editas for Net Sales of such Licensed Product. In the event Juno takes a credit against royalties due to Editas under this Agreement, then in the royalty report due to Editas under Section 7.3 at the time such credit is taken, Juno shall include a calculation of the credit taken and, with the first such royalty report on which such credit is taken, the basis for Juno's determination of commercial necessity. If any of the royalty rates in set forth in Section 6.6(a), after taking into account the Foundational In-Licenses (and, if applicable, the Duke In-License), any other In-License Agreements, any royalty amounts paid by Editas to a Third Party pursuant to this Section 6.6(c) and any amounts credited against royalties due to Editas hereunder pursuant to this Section 6.6(c), would result in the net royalty owing to Editas being less than the amounts set forth below, then such royalty rate is hereby increased to provide for the applicable minimum set forth in Section 6.6(d) below.

(d) In no event shall payments to Editas be reduced pursuant to Section 6.6(c) and Section 8.4 in the aggregate such that after taking into account the royalty owed by Editas under the Foundational In-Licenses (and, if applicable, the Duke In-License), any other In-License Agreements, any royalty amounts paid by Editas to a Third Party pursuant to Section

6.6(c) and any amounts credited against royalties due to Editas hereunder pursuant to Section 6.6(c), Editas would receive less than the following minimum net royalty: [**] percent ([**]%) of Net Sales of a Licensed Product under Section 6.6(a)(A)(i) (or [**] percent ([**]%) if the royalty is owed under the Duke In-License), [**] percent ([**]%) of Net Sales of a Licensed Product under Section 6.6(a)(A)(ii) (or [**] percent ([**]%) if the royalty is owed under the Duke In-License), [**] percent ([**]%) of Net Sales of a Licensed Product under Section 6.6(a)(A)(iii) (or [**] percent ([**]%) if the royalty is owed under the Duke In-License), [**] percent ([**]%) of Net Sales of a Licensed Product under Section 6.6(a)(B)(i) (or [**] percent ([**]%) if the royalty is owed under the Duke In-License), [**] percent ([**]%) of Net Sales of a Licensed Product under Section 6.6(a)(B)(ii) (or [**] percent ([**]%) if the royalty is owed under the Duke In-License), or [**] percent ([**]%) of Net Sales of a Licensed Product under Section 6.6(a)(B)(iii) (or [**] percent ([**]%) if the royalty is owed under the Duke In-License). Any amounts that are not offset during a reporting period shall not be creditable against payments arising in subsequent reporting periods. For clarity, no deduction may be made by Juno hereunder as a result of payments to a Third Party(ies) of running royalties on net sales of a Licensed Product for a license under a valid claim(s) of a pending patent application or issued patent(s) that claims a Gene Target, Protein Target, Engineered T-Cell or method of diagnosis, treatment or prevention of disease. Furthermore, no deduction may be made by Juno hereunder unless Juno has given Editas an opportunity, in accordance with the terms hereof, to enter into an agreement with such Third Party that would make the applicable valid claim(s) available for sublicensing to Juno in accordance with Section 8.4. Prior to taking any license from a Third Party that would give rise to an offset under this Section 6.6(c), Juno shall notify Editas. Juno shall not take any such license prior to having given Editas a period of at least [**] days for Editas to enter into an agreement with such Third Party that would make the applicable valid claim(s) available for sublicensing to Juno in accordance with Section 8.4. Notwithstanding the foregoing, if Juno is legally required by a future court order or settlement agreement to take a license from such Third Party prior to the end of such [**] day period, then Juno shall so notify Editas promptly, and such [**] day period shall be shortened to such legally required period. Juno shall cooperate with Editas, if so requested by Editas, in Editas' effort to take a license from any such Third Party.

(e) If the base royalty rate payable by Editas under one or more of the Foundational In-Licenses (and the [**] In-License if applicable) on account of Net Sales of Licensed Products is reduced after the Effective Date other than as result of the payment of additional and material consideration by Editas, Editas shall notify Juno of such reduction and the applicable royalty rate under Section 6.6(a) shall be reduced by an amount that is [**] percent ([**]%) of the effective reduction in aggregate royalty rate payable by Editas under the Foundational In-Licenses (and the [**] In-License if applicable).

ARTICLE 7
PAYMENTS; RECORDS

7.1 Payment Method. All payments due under this Agreement shall be made from a bank located in the United States by bank wire transfer in immediately available funds to a bank account designated by Editas. All payments hereunder shall be made in U.S. dollars. If the due date of any payment hereunder is a Saturday, Sunday or national holiday, such payment may be paid on the following business day. Any payments that are not paid on the date such payments are due

under this Agreement shall bear interest to the extent permitted by applicable law at the prime rate as reported by the Wall Street Journal on the date such payment is due, plus an additional [**] percent ([**]%), calculated on the number of days such payment is delinquent.

7.2 Taxes. If Laws require withholding by Juno of taxes imposed upon Editas on any amounts payable hereunder, Juno shall: (a) deduct such taxes as required by Law from the otherwise remittable payment; and (b) timely pay the taxes to the proper taxing authority; provided that before making any such deduction or withholding, Juno shall give Editas notice of the intention to make such deduction or withholding, which notice shall include the authority, basis and method of calculation for the proposed deduction or withholding, and shall be provided to the extent practicable at least a reasonable period of time before such deduction or withholding is required, in order for Editas to obtain reduction of or relief from such deduction or withholding. Official receipts of payment of withholding taxes shall be secured and sent to Editas as evidence of such payment. The Parties shall exercise their commercially diligent efforts to assist each other in claiming exemption from such deductions or withholdings under the provisions of any applicable Law or relevant double taxation or similar agreement or treaty from time to time in force and in minimizing the amount required to be so withheld or deducted. Notwithstanding anything in the foregoing to the contrary, and except as set forth in Section 7.7, Juno agrees to make all payments to Editas hereunder from within the United States of America, unless Editas otherwise agrees in writing.

7.3 Royalty Payments and Reports. Royalty payments under this Agreement with respect to Net Sales of Licensed Product in a given calendar quarter shall be made to the Editas or its designee quarterly within [**] days following the last day of the applicable calendar quarter. Each royalty payment shall be accompanied by a report detailing, [**].

7.4 Books and Records; Accounting and Audits. Juno shall maintain (and shall cause its Affiliates and Sublicensees to maintain) complete, true and accurate books and records, in accordance with GAAP, in sufficient detail for Editas to determine the calculation of Net Sales and royalty and other payments payable by Juno hereunder. Editas shall maintain complete, true and accurate books and records, in accordance with GAAP, in sufficient detail for Juno to determine costs and expenses incurred by Editas that are payable by Juno hereunder. Each Party shall maintain such records for at least [**] years following the end of the calendar year to which they pertain. A Party (the "Auditing Party") shall have the right, at its own expense and not more than [**] during the Term, to have an independent, certified public accountant of nationally recognized standing, selected by the Auditing Party and reasonably acceptable to the other Party ("Audited Party"), and under appropriate obligations of confidence, audit such books and records of the Audited Party in the location(s) where such books and records are maintained upon reasonable notice (which shall be no less than [**] business days' prior written notice) and during regular business hours, for the sole purpose of verifying the basis and accuracy of the payments required and made under this Agreement or the work completed and amounts to be reimbursed, as applicable, in each case for the period commencing on the first day of the [**] calendar year preceding the year during which such audit is conducted. Such audit may encompass any portion of the period commencing on the first day of the [**] calendar year preceding the year during which the audit occurs and ending on the date on which the audit occurs. The report of such accountant with respect to such an audit shall be limited to a certificate stating whether any report made or invoice or payment submitted by the Audited Party during such period is accurate or

inaccurate and, if a discrepancy is identified, shall also indicate the amount and nature of such discrepancy, and the correct information (with respect to the applicable period). No other information shall be provided to the Auditing Party. Such accountant shall provide Editas and Juno with a copy of each such report simultaneously. Should the audit lead to the discovery of a discrepancy: (a) to the Auditing Party's detriment, the Audited Party shall pay to the Auditing Party the amount of the discrepancy within [**] days of the Audited Party's receipt of the report; or (b) to the Audited Party's detriment, the Audited Party may, as applicable, credit the amount of the discrepancy against future payments payable to the Auditing Party under this Agreement, and if there are no such payments payable, then the Auditing Party shall pay to the Audited Party the amount of the discrepancy within [**] days of the Auditing Party's receipt of the report. The Auditing Party shall pay the full cost of the review unless the discrepancy is to the Auditing Party's detriment and is greater than [**] percent ([**]%) of the amount due or payable (or in the case where Juno is the Auditing Party, the costs and expenses required to be reimbursed by Juno) for such audited period, then the Audited Party shall pay or reimburse the reasonable cost charged by such accountant for such audit. Once the Auditing Party has conducted an audit permitted by this Section 7.4 in respect of any period, it may not re-inspect the Audited Party's books and records in respect of such period, unless a subsequent audit of a separate reporting period uncovers fraud on the part of the Audited Party that is reasonably expected to have been occurring during the prior audited period. The Parties shall no longer be required to retain such books and records for any calendar year after the expiration of the [**] calendar year following such calendar year.

7.5 United States Dollars. All dollar ($) amounts specified in this Agreement are United States dollar amounts.

7.6 Payment Method and Currency Conversion. Except as otherwise provided herein, all payments due to a Party hereunder shall be due and payable within [**] days after receipt of an invoice from the other Party and shall be paid via a bank wire transfer to such bank account as such Party shall designate. For the purposes of determining the amount of any payment due to Editas hereunder for the relevant calendar quarter under Section 6.6 amounts received by Juno in any foreign currency shall be converted into United States dollars using the conversion rate existing in the United States (as reported in the Wall Street Journal) on the last business day of the applicable calendar quarter; provided, however, that if the Wall Street Journal ceases to be published or does not quote the applicable currency exchange rate, then the rate of exchange to be used shall be that reported in such other business publication of national circulation in the United States or by such foreign currency desk of a major money-center bank as Juno reasonably shall select and of which Juno shall provide Editas with notice.

7.7 Blocked Currency. If at any time applicable Law in any country in the Territory makes impossible or illegal the prompt remittance of any payments with respect to sales therein, Juno shall promptly notify Editas of the conditions preventing such transfer and such royalties or other payments shall be deposited in local currency in the relevant country to the credit of Editas in a recognized banking institution with a good creditworthiness, such banking institution to be designated by Editas or, if none is designated by Editas within [**] days, in a recognized banking institution selected by Juno and identified in a written notice given to Editas. If so deposited in a foreign country, Juno shall provide reasonable cooperation to Editas so as to allow Editas to assume control over such deposit as promptly as practicable.

7.8 Confidentiality. Each Party shall treat all financial information of the other Party that is subject to review under this ARTICLE 7of this Agreement (including all royalty reports) as such other Party's Confidential Information.

ARTICLE 8
INTELLECTUAL PROPERTY

8.1 Ownership of Inventions; Disclosure.

(a) Ownership. Title to all Inventions and other intellectual property made by employees or agents of Editas in the course of activities conducted pursuant to the Research Program shall be owned by Editas; title to all Inventions and other intellectual property made by employees or agents of Juno in the course of activities conducted pursuant to the Research Program shall be owned by Juno; title to all Inventions and other intellectual property made jointly by employees or agents of Juno and Editas in the course of performing, or in connection with, the Research Program shall be owned jointly by Juno and Editas. For the avoidance of doubt, Editas and its employees and agents that are used under the Research Program are not employees or agents of Juno. Inventorship of Inventions and other intellectual property made pursuant to this Agreement shall be determined in accordance with the patent laws of the United States. Except as expressly provided in this Agreement, neither Party shall have any obligation to account to the other for profits, or to obtain any approval of the other Party to license or exploit jointly-owned subject matter, by reason of joint ownership thereof, and each Party hereby waives any right it may have under the laws of any jurisdiction to require any such consent or accounting.

(b) Disclosure of Inventions. Each Party shall promptly disclose to the other any Inventions made in connection with this Agreement. Neither Party shall use the results of the Research Program or any information constituting Collaboration IP to support any patent applications that are not a Collaboration Patent.

(c) Background IP. Each Party shall retain ownership of intellectual property rights existing as of the Effective Date, or developed or acquired independently of the Research Program, and nothing in this Agreement shall assign any ownership to the other Party with respect to such intellectual property rights.

(d) License to Editas. Subject to the rights granted under Section 4.2, Juno hereby grants to Editas under the Juno Collaboration IP a non-exclusive, perpetual, worldwide, fully paid-up, royalty-free license (with right to sublicense through multiple tiers) to practice any methods and to make, use, sell, offer for sale and import any products in each case in the field of Genome Editing Technology.

(e) License to Juno. Editas hereby grants to Juno under the Editas Collaboration IP a non-exclusive, perpetual, worldwide, fully paid-up, royalty-free license (with right to sublicense through multiple tiers) to practice any methods and to make, use, sell, offer for sale and import any products in each case in the field of Engineered T-Cells.

8.2 Patent Prosecution.

(a) Editas Collaboration Patents. Editas shall be responsible, at its expense, and shall have the exclusive right for preparing, filing, prosecuting and maintaining the Editas Collaboration Patents and for conducting any interferences, re-examinations, inter partes review, post-grant proceedings, reissues and oppositions relating thereto. Editas shall keep Juno fully informed with respect to (a) the issuance of patents filed by Editas pursuant to this Section 8.2(a) and (b) the abandonment of any patent or patent application maintained by Editas pursuant to this Section 8.2(a). Without limiting the foregoing, Editas shall (i) provide Juno with copies of the text of the applications relating to the Editas Collaboration Patents as soon as practical but at least [**] days before filing, except for urgent filings in which case Editas shall provide copies as soon as practical before, simultaneously with or immediately after filing; (ii) provide Juno with a copy of each submission made to and material document received from a patent authority, court or other tribunal regarding any Editas Collaboration Patents reasonably promptly after making such filing or receiving such material document, including a copy of each application as filed together with notice of its filing date and application number; (iii) keep Juno advised of the status of all material communications, actual and prospective filings or submissions regarding the Editas Collaboration Patents, and shall give Juno copies of any such material communications, filings and submissions proposed to be sent to any patent authority or judicial body; and (iv) consider in good faith Juno's comments on the material communications, filings and submissions for the Editas Collaboration Patents.

(b) Juno Collaboration Patents. Juno shall be responsible, at its expense, and shall have the exclusive right for preparing, filing, prosecuting and maintaining the Juno Collaboration Patents and for conducting any interferences, re-examinations, inter partes review, post-grant proceedings, reissues and oppositions relating thereto. To the extent the Juno Collaboration Patents relate to Genome Editing Technology, Juno shall keep Editas fully informed with respect to (a) the issuance of patents filed by Juno pursuant to this Section 8.2(a) and (b) the abandonment of any patent or patent application maintained by Juno pursuant to this Section 8.2(a). Without limiting the foregoing, Juno shall (i) provide Editas with copies of the text of the applications relating to such Juno Collaboration Patents as soon as practical but at least [**] days before filing, except for urgent filings in which case Juno shall provide copies as soon as practical before, simultaneously with or immediately after filing; (ii) provide Editas with a copy of each submission made to and material document received from a patent authority, court or other tribunal regarding any such Juno Collaboration Patents reasonably promptly after making such filing or receiving such material document, including a copy of each application as filed together with notice of its filing date and application number; (iii) keep Editas advised of the status of all material communications, actual and prospective filings or submissions regarding the such Juno Collaboration Patents, and shall give Editas copies of any such material communications, filings and submissions proposed to be sent to any patent authority or judicial body; and (iv) consider in good faith Editas' comments on the material communications, filings and submissions for such Juno Collaboration Patents.

(c) Joint Collaboration Patents. The Parties shall be jointly responsible for preparing, filing, prosecuting and maintaining the Joint Collaboration Patents and for conducting any interferences, re-examinations, inter partes review, post-grant proceedings, reissues and oppositions relating thereto and shall equally share all costs related thereto. Within [**] days following the Effective Date, the parties shall jointly select counsel ("Joint Counsel") for the prosecution and maintenance of all Joint Collaboration Patents. The Joint Counsel shall give

Juno and Editas (or each Party's designee) an opportunity to review the text of each application, office action response or other substantive document relating to a prospective Joint Collaboration Patent before filing with any patent office in the Territory, shall incorporate Juno's and Editas' (or each Party's designee) reasonable comments with respect thereto, and shall supply Juno and Editas (or each Party's designee) with a copy of each such application, office action response or other substantive document as filed, together with notice of its filing date and serial number. In the event that Editas and Juno provide Joint Counsel with conflicting instructions regarding the prosecution or maintenance of a Joint Collaboration Patent, Joint Counsel shall make the Parties aware of such conflicting instructions and the Parties shall attempt to resolve such conflict through their respective Chief Executive Officers, who shall meet in person or by telephone promptly after being made aware of such conflict. If the Parties are not able to resolve such conflict within a reasonable time prior to the applicable filing deadline, the Joint Counsel shall take such action with respect to claims relating to Genome Editing Technology as Editas shall have instructed and with respect to claims relating to Engineered T-Cells as Juno shall have instructed, and such action with respect to all other claims as would reasonably be expected to maximize the scope, extent and coverage of such Joint Collaboration Patent, provided, however, that with respect to such all other claims, if Joint Counsel is unwilling to act in the absence of a mutually agreed instruction of the Parties, then Joint Counsel shall take no action. Both Parties shall cooperate with Joint Counsel for all activities relating to Joint Collaboration Patent prosecution and maintenance

(d) Cooperation. Each Party shall reasonably cooperate with and assist the other Party in connection with the activities of such Party under this Section 8.2 upon the reasonable request of the other Party or by Joint Counsel, including by making scientists and scientific records reasonably available and the execution of all such documents and instruments and the performance of such acts as may be reasonably necessary in order to permit the other Party to continue any filing, prosecution, maintenance or extension of such patents and patent applications.

8.3 Enforcement and Defense.

(a) Notice. Each Party shall promptly notify the other of any knowledge it acquires of any potential infringement of (i) the Collaboration Patents with respect to any Engineered T-Cells, or (ii) the Editas Patents with respect to a Competitive Product, in each case by a Third Party.

(1) If (i) any Editas Collaboration Patent is infringed by a Third Party in any country in the Territory in connection with Engineered T-Cells incorporating a Final [**] Engineered T-Cell Target, Final [**] Engineered T-Cell or [**] T-Cell Target the expression of which has been modulated, or (ii) any Editas Patent is infringed by a Third Party in any country in the Territory in connection with a Competitive Product (which for purposes of this Section 8.3 requires that the Licensed Product with respect to which there is a Competitive Product must be a Licensed Product that includes a [**] Engineered T-Cell Target, [**] Engineered T-Cell Target or [**] Engineered T-Cell Target, as applicable, that Juno has designated as a Final [**] Engineered T-Cell Target, a Final [**] Engineered T-Cell Target or Final [**] Engineered T-Cell Target, as applicable), then except as provided in Section 8.3(a)(2) below, Editas shall have the primary right, but not the obligation, to institute, prosecute, and

control any action or proceeding with respect to such infringement of such patent, by counsel of its own choice. If in any such proceeding Juno is required to join for standing purposes or in order for Editas to commence or continue any such proceeding, then Juno shall join such proceeding, [**], and shall be represented in such proceeding by counsel of Juno's choice. The exercise by Editas of the right to bring an infringement action shall be subject to and consistent with the terms of all applicable In-License Agreements. If Editas does not take action in the prosecution, prevention, or termination of any infringement pursuant to this Section 8.3(a)(1), and has not commenced negotiations with the suspected infringer for the discontinuance of said infringement, within [**] days after receipt of notice of the existence of an infringement (or in cases where there is a relevant statutory period during which an infringement action must be commenced that would expire prior to the expiration of such [**] day period and of which Juno has notified Editas promptly after it becomes aware, [**] days prior to the expiration of such relevant statutory period), Juno and Editas shall meet and discuss Editas' reasons for not initiating a lawsuit or otherwise making or prosecuting a claim. If after having given due consideration to Editas' reasons, Juno desires to initiate a lawsuit or otherwise make or prosecute a claim of infringement with respect to Engineered T-Cells incorporating a Final [**] Engineered T-Cell Target, Final [**] Engineered T-Cell or [**] T-Cell Target the expression of which has been modulated or a Competitive Product, in each case that is being commercialized in the Exclusive Field, Juno shall so notify Editas. The Parties will negotiate in good faith and reach a written agreement on the terms and conditions under which Juno may initiate a lawsuit or otherwise make or prosecute such claim of infringement under the relevant claims of Editas Collaboration Patents and Editas Patents; provided, however, that if the expiration date of a statutory period of commercial exclusivity with respect to a Licensed Product is known, then if requested by Juno, the Parties will commence the good faith negotiation of such agreement up to [**] in advance of such expiration date; and provided further, however that Juno acknowledges and agrees that it shall have no right under any circumstances to initiate a lawsuit or otherwise make or prosecute a claim of infringement under an Editas Patent that is subject to a license under an In-License Agreement unless Editas has the right under the applicable In-License Agreement to grant to Juno the right to initiate a lawsuit or otherwise make or prosecute a claim of infringement and such grant is expressly provided in the rights granted to Juno pursuant to the agreement contemplated by this sentence of this Section 8.3(a)(1).

(2) If any Editas Solely Owned Patent and/or Editas Collaboration Patent claims a [**] Reagent(s) as composition(s) of matter (or claims the manufacture or use thereof), a method of making an Engineered T-Cell using Genome Editing Technology and/or an Engineered T-Cell made using a [**] Reagent(s) and such claim(s) is(are) infringed by a Third Party in any country in the Territory in connection with a Competitive Product being Commercialized in the Exclusive Field, then Juno shall have the primary right, but not the obligation, to institute, prosecute, and control any action or proceeding with respect to such infringement of such claim(s) , by counsel of its own choice. For clarity, a claim of an Editas Solely Owned Patent or an Editas Collaboration Patent that claims a novel Cas9 as a composition of matter is not a claim to a [**] Reagent(s) that incorporates such Cas9 as composition of matter, but a claim to a [**] Reagent(s) the description of which includes such Cas9 may be a claim to a [**] Reagent(s) as a composition of matter. For further clarity, a claim of an Editas Solely Owned Patent or an Editas Collaboration Patent that claims a method of making a cell of any sort using Genome Editing Technology is not a claim to a method of making an Engineered T-Cell using Genome Editing Technology, but a claim to a method of

making a CAR-T Cell may be a claim to a method of making an Engineered T-Cell using Genome Editing Technology. If in any such proceeding Editas is required to join for standing purposes or in order for Juno to commence or continue any such proceeding, then Editas shall join such proceeding, [**], and shall be represented in such proceeding by counsel of Editas' own choice. If in any such proceeding Editas is not required to join for standing purposes or in order for Juno to commence or continue any such proceeding, Editas shall have the right, but not the obligation, to join such proceeding, at Editas' expense, and shall be represented in such proceeding by counsel of Editas' own choice. Juno shall keep Editas reasonably informed of the progress of the action or proceeding and shall give Editas a reasonable opportunity in advance to consult with Juno and offer its views about material decisions affecting such action or proceeding. Juno shall give careful consideration to those views, but shall have the right to control such action or proceeding. If Juno fails to defend in good faith the validity and/or enforceability of the Editas Solely Owned Patents and/or Editas Collaboration Patents in such action or proceeding, Editas may elect to take control of such action or proceeding as if it were initiated pursuant to Section 8.3(a)(1). Juno shall not compromise or settle any action or proceeding on terms that diminish the scope, validity or enforceability of Editas IP or Editas Collaboration Patents without the prior written consent of Editas. If Juno does not take action in the prosecution, prevention, or termination of any infringement pursuant to this Section 8.3(a)(2), and has not commenced negotiations with the suspected infringer for the discontinuance of said infringement, within [**] days after receipt of notice of the existence of an infringement, then Editas shall have the sole right to bring an enforcement action in accordance with Section 8.3(a)(1).

(3) If any Joint Collaboration Patent is infringed by a Third Party in any country in the Territory in connection with Engineered T-Cells, then Juno shall have the primary right, but not the obligation, to institute, prosecute, and control any action or proceeding with respect to such infringement of such patent, by counsel of its own choice. Juno shall notify Editas at least [**] days prior to initiating any such action or proceeding. Promptly after a request by Editas, the Parties shall meet to discuss any reasons Editas may have against initiating any such action or proceeding, and Juno shall consider such reasons in good faith. The Parties will negotiate in good faith the terms and conditions under which Editas shall be kept informed of the progress and status of, and Juno shall consider in good faith the suggestions of Editas with respect to, any such action or proceeding to the extent it relates to Genome Editing Technology. If in any such proceeding Editas is required to join for standing purposes or in order for Juno to commence or continue any such proceeding, then Editas shall join such proceeding, [**]. Editas shall be represented in such proceeding by counsel of its own choice, subject to the approval of Juno, not to be unreasonably withheld or delayed.

(4) Unless otherwise agreed by the Parties in writing, the amount of any recovery from a proceeding brought under Section 8.3(a)(1) or 8.3(a)(2) or 8.3(a)(3) shall first be applied to the out-of-pocket costs of such action by both Parties, and then Editas shall receive an amount equal to the royalties that would have been due upon the remainder as if such remainder are Net Sales of a Licensed Product sold by or under the authority of Juno, and the remaining portion of such recovery shall be paid to Juno. If in connection with a proceeding brought under Section 8.3(a)(1), an In-License Counterparty is entitled to a portion of any recovery that is greater than its royalty on Net Sales of a Licensed Product, the Parties will meet and agree in good faith on an alternative sharing of such recovery

to that set forth in the immediately preceding sentence that takes into account the amounts payable to the applicable In-License Counterparties and results in an equitable allocation of the amounts remaining to Juno and Editas after payment of such amounts to the applicable In-License Counterparties.

(5) With respect to any defense or declaratory judgment actions relating to Joint Collaboration Patents, Juno shall have the sole right, but not the obligation, to assume the defense thereof at [**]. If Juno declines to take such action, then Editas shall have the right, but not the obligation, to assume the defense thereof at [**]. Each Party agrees to render such reasonable assistance as the defending Party may request, at the defending Party's expense, with respect to actions brought pursuant to this Section 8.3(a)(5). For the avoidance of doubt, with respect to any defense or declaratory judgment actions relating Editas Collaboration Patents, Editas shall have the sole right, but not the obligation to assume the defense thereof at its sole cost and expense. With respect to any defense or declaratory judgment actions relating to Juno Collaboration Patents, Juno shall have the sole right, but not the obligation to assume the defense thereof at its sole cost and expense.

8.4 Subsequently Obtained IP. If during the Term, Editas or its Affiliates (other than any person or entity that acquires all or any part of Editas or an Affiliate of Editas, and any affiliates of such person or entity) may first Control (a) Know-How that relates to the Genome Editing Technology used in the conduct of the Research Program or is necessary to make, use, sell, offer for sale or import a Licensed Product, and (b) Patent Rights that claim or cover any of the Know-How described in clause (a) (collectively, the "Subsequently Obtained IP"), Editas shall promptly provide to Juno a written description of the Subsequently Obtained IP after generation or acquisition, together with a true and correct copy of any Third Party license or other agreement pursuant to which Editas acquired such Subsequently Obtained IP (redacted as to terms not material to a sublicensee thereunder). If such agreement permits the sublicensing of rights to Juno and Juno notifies Editas in writing within [**] days after receipt of such copy of such Third Party license agreement that Juno elects to receive a sublicense of rights granted under such Third Party license agreement, then the rights granted under such Third Party license agreement shall be an "In-License" under this Agreement, and such Third Party license agreement shall be an "In-License Agreement" under this Agreement. Unless and to the extent Editas is legally required by a future court order or settlement agreement to make any amendments or modifications to an In-License Agreement (including the Foundational In-Licenses or Duke In-License) after the date the In-License Agreement was first provided to Juno, Editas shall not make any amendments or modifications to such In-License Agreement that would materially increase the obligations or materially decrease the rights of Juno as a sublicensee under such In-License as provided herein without Juno's written consent. If Editas intends to take any action or inaction to terminate any In-License Agreement, including a Foundational In-License or Duke In-License, Editas shall use Commercially Reasonable Efforts to provide Juno with an opportunity to obtain a direct license from the applicable Third Party. Notwithstanding the foregoing, Editas, without Juno's written consent and without providing Juno with an opportunity to obtain a direct license, may amend, modify or terminate an In-License Agreement with respect to Know-How and/or Patent Rights that cover or claim Genome Editing Technology that is not used (nor intended to be used) in the Research Program or other Know-How and/or Patent Rights that are not necessary to make, use, sell, offer for sale or import a Licensed Product. All Subsequently Obtained IP will only be included in the Editas IP if Juno agrees in writing to any pass-through financial obligations under

the applicable Third Party license or other agreement; provided, that if and to the extent the relevant In-License Agreement would have resulted in a royalty offset under Section 6.6(c) had such Subsequently Obtained IP been licensed by Juno from a Third Party as provided in Section 6.6(c), the pass-through running royalty obligations paid by Juno in accordance with such In-License Agreement as provided in this Section 8.4 shall be treated as if they were paid by Juno under a Third Party license or other agreement in accordance with the terms of Section 6.6(c) for purposes of determining the minimum net royalties owed under Section 6.6(c).

8.5 Duke In-License. Editas promptly shall seek from Duke a consent to a sublicense (on the terms provided herein) under the Duke In-License of the rights licensed to Editas under the Duke In-License relating to Genome Editing Technology. Editas shall use Commercially Reasonable Efforts to seek and obtain such consent; provided, however, for clarity, that such Commercially Reasonable Efforts shall not require the payment by Editas of any consideration to Duke that is not provided for in the Duke In-License. Know-How and Patent Rights that are the subject to the Duke In-License will only be included in the Editas IP if and when such consent from Duke is obtained.

8.6 Patent Challenge. In the event that Juno or any of its agents, Affiliates or Juno Sublicensees is or becomes a Challenging Party, then (a) Juno shall provide Editas with at least [**] days' notice prior to taking any such action, (b) [**], either directly or under the terms of the Harvard-Broad License, within [**] days after [**]; (c) the exclusive licenses granted in this Agreement may, as of the date of initiation of said challenge or opposition, upon notice by Editas to Juno, be converted by Editas at its option into non-exclusive licenses for the remainder of the Term, and in such event Editas shall have the right to grant licenses under the Editas IP to third parties in the Exclusive Field, subject to the then-existing non-exclusive license provided herein; (d) if any fees, royalties, milestones or revenues payable to Institutions under the Harvard-Broad License double in amount as a result of such Patent Challenge, [**]; and (e) at any time after the Patent Challenge is brought, Editas may, at its option, terminate this Agreement according to Section 13.5; provided that if any of subsections (a) through (e) are held invalid or unenforceable for any reason, such invalidity or unenforceability shall not affect any of the other said subsections. Notwithstanding any provision of this Agreement to the contrary, Juno shall not have the right to assume or participate in the defense, settlement or other disposition of such Patent Challenge through its status as licensee under this Agreement, but [**]. The Parties agree that any challenge or opposition to a Patent Right by Juno may be detrimental to Editas, and that the above provisions shall constitute reasonable liquidated damages to reasonably compensate Editas for any loss it may incur as a result of Juno taking such action.

ARTICLE 9
CONFIDENTIALITY AND PUBLICATION

9.1 Confidential Information. Except as otherwise expressly provided herein, the Parties agree that, for the Term and for [**] years thereafter, the receiving Party shall not, except as expressly provided in this ARTICLE 9, disclose to any Third Party any Confidential Information furnished to it by the disclosing Party pursuant to this Agreement, or any results of the Research Program ("Results"). For purposes of this ARTICLE 9, "Confidential Information" mean any information, samples or other materials, which if disclosed in tangible form is marked

"confidential" or with other similar designation to indicate its confidential or proprietary nature, or, if disclosed orally, is indicated orally to be confidential or proprietary at the time of such disclosure and is confirmed in writing as confidential or proprietary within [**] days after such disclosure. Notwithstanding the foregoing, Confidential Information shall not include any information that can be established by the receiving Party by competent proof that such information:

(a) was already known to the receiving Party, other than under an obligation of confidentiality, at the time of disclosure;

(b) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the receiving Party;

(c) became generally available to the public or otherwise part of the public domain after its disclosure and other than through any act or omission of the receiving Party in breach of this Agreement;

(d) was independently developed by the receiving Party as demonstrated by documented evidence prepared contemporaneously with such independent development; or

(e) was disclosed to the receiving Party, other than under an obligation of confidentiality, by a Third Party who had no obligation to the disclosing Party not to disclose such information to others.

Notwithstanding anything to the contrary in this Section 9.1, and for the purposes of clarity, the identity of the Gene Targets and the results of the Research Program shall be deemed Confidential Information of Juno. The identity of the Gene Targets and the Research Program results shall not be disclosed by Editas to any Third Party for so long as the identity of such Gene Target or such results remains Confidential Information.

9.2 Permitted Use and Disclosures. Each Party may use or disclose Confidential Information disclosed to it by the other Party or Results to the extent such use or disclosure is reasonably necessary and permitted in the exercise of the rights granted hereunder (including Juno's development and commercialization of Products) and in filing or prosecuting patent applications (subject to Section 8.1(b)), prosecuting or defending litigation, complying with applicable governmental laws, regulations or court order or otherwise submitting information to tax or other governmental authorities, per the rules of any securities exchange or similar organization, conducting clinical trials, or making a permitted sublicense or otherwise exercising license rights expressly granted by the other Party to it pursuant to the terms of this Agreement, provided that if a Party is required by governmental authority to make any such disclosure, other than pursuant to a confidentiality agreement, it shall give reasonable advance notice to the other Party of such disclosure and, save to the extent inappropriate in the case of patent applications, shall use its reasonable efforts to secure confidential treatment of such information in consultation with the other Party prior to its disclosure (whether through protective orders or otherwise) and disclose only the minimum necessary to comply with such requirements.

9.3 Scientific Publications. During the Research Program Term, neither Party shall first publish or first present in a public forum the scientific or technical results of any activity performed

pursuant to this Agreement without the opportunity for prior review and comment by the other Party. Each Party agrees to provide the other Party with the opportunity to review any proposed abstract, manuscript or scientific presentation (including any verbal presentation) that relates to its activities performed pursuant to this Agreement during the Research Program Term, at least [**] days prior to its intended submission for publication and agrees, upon request, not to submit any such abstract or manuscript for publication until the other Party is given a reasonable period of time up to [**] to secure patent protection for any material in such publication that it believes to be patentable. Both Parties understand that a reasonable commercial strategy may require delay of publication of information or filing of patent applications first with respect to activities performed or results obtained pursuant to this Agreement during the Research Program Term, or not to publish at all if necessary to preserve trade secrets. The Parties agree to review and decide whether to delay publication of such information to permit filing of patent applications. Neither Party shall have the right to publish or present any Confidential Information of the other Party, except as provided in Section 9.2. After the Research Program Term, each Party and its Affiliates may publish or present results, data or scientific findings of any of their activities without the prior review of the other Party, provided that such publication or presentation does not disclose any of the other Party's Confidential Information. Nothing contained in this Section 9.3 shall prohibit the inclusion of information necessary for a patent application; provided that the non-filing Party is given a reasonable opportunity to review the information to be included prior to submission of such patent application in accordance with Section 8.2. Nothing contained in this Section 9.3 shall prohibit either Party from disclosing the results, data or scientific findings of any activity performed by the other Party or its Affiliates pursuant to this Agreement without prior review and prior written consent of the other Party, where required, as reasonably determined by the disclosing Party's legal counsel, by applicable law; provided that if a Party is required by law to make any such disclosure, to the extent it may legally do so, it will give reasonable advance notice to the other Party of such disclosure and will use its reasonable efforts to secure confidential treatment of such information prior to its disclosure (whether through protective orders or otherwise).

9.4 Nondisclosure of Terms. Each of the Parties agrees that the terms of this Agreement are Confidential Information of each Party and not to disclose the terms of this Agreement to any Third Party without the prior written consent of the other Party, which consent shall not be unreasonably withheld, except: (a) as otherwise permitted under this Agreement; or (b) to such Party's attorneys, advisors, investors, potential investors, acquirers and other similarly situated Third Parties, and in the case of Juno to actual or prospective collaborators or licensees, in each case on a need to know basis under circumstances that reasonably ensure the confidentiality thereof, or to the extent required by law. Notwithstanding the foregoing, the parties have agreed upon the content of a joint press release which shall be issued substantially in the form attached hereto as Schedule 9.4, the release of which the parties shall coordinate in order to accomplish such release promptly upon execution of this Agreement.

9.5 Compliance with In-Licenses. To the extent required under the terms of an In-License Agreement, Juno agrees that Editas may disclose this Agreement, its terms and any other information that otherwise would be the Confidential Information of Juno.

ARTICLE 10
REPRESENTATIONS AND WARRANTIES

10.1 Juno. Juno represents, warrants and covenants that: (a) it has the legal power, authority and right to enter into this Agreement and to fully perform all of its obligations hereunder; (b) this Agreement is a legal and valid obligation binding upon it and enforceable in accordance with its terms; (c) the performance of its obligations and the grant of rights hereunder do not conflict with, violate or breach or constitute a default or require any consent under, any contractual obligations of Juno or its Affiliates; and (d) as of the Effective Date there is no claim or demand of any Third Party pertaining to, or any proceeding that is pending or, to the knowledge of Juno, threatened, that challenges the rights of Juno to use the Gene Targets or to conduct the Research Program.

10.2 Editas. Except [**], Editas represents, warrants and covenants that: (a) it has the legal power, authority and right to enter into this Agreement and to fully perform all of its obligations hereunder; (b) this Agreement is a legal and valid obligation binding upon it and enforceable in accordance with its terms; (c) the performance of its obligations and the grant of rights hereunder do not conflict with, violate or breach or constitute a default or require any consent under, any contractual obligations of Editas or its Affiliates; (d) as of the Effective Date there is no claim or demand of any Third Party pertaining to, or any proceeding that is pending or, to the knowledge of Editas, threatened, that challenges the rights of Editas to use the Editas IP or to conduct the Research Program; (e) as of the Effective Date, [**], no Third Party has made claims regarding ownership of, nor are there other defects or deficiencies in the ownership of, the Editas IP in a manner that would materially adversely affect the scope (when taken as a whole) of Juno's licenses granted under this Agreement; and (f) as of the Effective Date, [**], the use of the Editas Know-How intended to be used in the Research Program as provided in the Research Plan, and the use of the [**] Reagents intended to be made under the Research Plan, would not result in the infringement of any issued patent owned by a Third Party and as to which Editas does not have a sufficient license or other right of use, provided that the representation in this clause (f) shall not extend to [**].

10.3 Disclaimer. Juno and Editas specifically disclaim any guarantee that the Research Program shall be successful, in whole or in part. Provided that the Parties perform their obligations under this Agreement and the Research Plan, the failure of the Parties to successfully develop, a [**] Engineered T-Cell, a [**] Engineered T-Cell or an [**] Engineered T-Cell and/or Licensed Products shall not constitute a breach of any representation or warranty or other obligation under this Agreement. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS AGREEMENT, EDITAS AND JUNO MAKE NO REPRESENTATIONS AND EXTEND NO WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE EDITAS IP, COLLABORATION IP, INFORMATION DISCLOSED HEREUNDER OR PRODUCTS INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, VALIDITY OF ANY COLLABORATION IP, PATENTED OR UNPATENTED, OR NONINFRINGEMENT OF THE INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES.

ARTICLE 11
INDEMNIFICATION

11.1 Juno. Juno agrees to indemnify, defend and hold harmless Editas and its Affiliates and their respective directors, officers, employees, agents and their respective successors, heirs and assigns (the "Editas Indemnitees") from and against any losses, costs, claims, suits, investigations, actions, demands, judgments, damages, deficiency, liabilities, expense or obligation or any kind or nature (including reasonable attorneys' and professional fees and other costs and expenses of litigation or defense) (collectively, "Liabilities") based upon, arising out of or otherwise in connection with, directly or indirectly, any Third Party claims, suits, actions, demands or judgments, relating to (a) personal injury or death resulting from any Product researched, Developed, manufactured, used, sold or otherwise distributed by or on behalf of Juno, its Affiliates or Sublicensees, (b) the negligence or willful misconduct of Juno or (c) any breach by Juno of the representations, warranties or covenants made in this Agreement, except, in each case, to the extent such Liabilities result from Section 11.2(a) or (b), or of any provision of an In-License Agreement of which Juno is aware.

11.2 Editas. Editas agrees to indemnify, defend and hold Juno and its Affiliates and Sublicensees and their respective directors, officers, employees, agents and their respective successors, heirs and assigns (the "Juno Indemnitees") harmless from and against any Liabilities arising, directly or indirectly out of or in connection with Third Party claims, suits, actions, demands or judgments, relating to (a) the negligence or willful misconduct of Editas, or (b) any breach by Editas of its representations, warranties and covenants made in this Agreement, except, in each case, to the extent such Liabilities result from Section 11.1(b) or (c).

11.3 Indemnification Procedure. A Party that intends to claim indemnification (the "Indemnitee") under this ARTICLE 11 shall promptly notify the other Party (the "Indemnitor") in writing of any claim, complaint, suit, proceeding or cause of action with respect to which the Indemnitee intends to claim such indemnification (for purposes of this Section 11.3, each a "Claim"), and the Indemnitor shall have sole control of the defense and/or settlement thereof; provided that the Indemnitee shall have the right to participate, at its own expense, with counsel of its own choosing in the defense and/or settlement of such Claim. The indemnification obligations of the Parties under this ARTICLE 11 shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the consent of the Indemnitor. The failure to deliver written notice to the Indemnitor within a reasonable time after the commencement of any such Claim, if prejudicial to its ability to defend such action, shall relieve such Indemnitor of liability to the Indemnitee under this ARTICLE 11, but the omission to deliver such written notice to the Indemnitor shall not relieve the Indemnitor of any liability to any Indemnitee otherwise than under this ARTICLE 11. The Indemnitee under this ARTICLE 11, and its employees, at the Indemnitor's request and expense, shall provide full information and reasonable assistance to Indemnitor and its legal representatives with respect to such Claims covered by this indemnification. It is understood that only Juno or its permitted assignee may claim indemnity under this ARTICLE 11 (on its own behalf or on behalf of a Juno Indemnitee), and other Juno Indemnitees may not directly claim indemnity hereunder. Likewise, it is understood that only Editas may claim indemnity under this ARTICLE 11 (on its own behalf or on behalf of an Editas Indemnitee), and other Editas Indemnitees may not directly claim indemnity hereunder.

ARTICLE 12
OTHER TERMS RELATING TO IN-LICENSES

12.1 Indemnification under the Harvard-Broad License. Notwithstanding the provisions of Article 11 to the contrary, the provisions of this Section 12.1 shall apply to Juno's obligation to indemnify Institution Indemnitees, MIT Indemnitees and HHMI Indemnitees:

12.1.1 Juno shall, and shall cause its Affiliates and Juno Sublicensees to, indemnify, defend and hold harmless the Institution Indemnitees and MIT Indemnitees from and against any claim, suit, investigation, action, demand, judgment, liability, cost, expense, damage, deficiency, loss or obligation of any kind or nature (including reasonable attorneys' fees and other costs and expenses of litigation or defense), based upon, arising out of, or otherwise relating to this Agreement or any sublicense or subcontract hereunder, including any cause of action relating to product liability concerning any product, process, or service made, used, sold or performed pursuant to any right or license granted under this Agreement (collectively, "Claims") except to the extent any such Claim results from or arises out of the gross negligence or willful misconduct of an Institution Indemnitee or MIT Indemnitee seeking indemnification hereunder or material breach of the Harvard-Broad Agreement by an Institution. Juno and each of its Affiliates and Juno Sublicensees are referred to as "Juno Indemnitor" below.

12.1.2 Notification of Editas; Editas Right to Consent. In the event that a Juno Indemnitor receives notice of any Claim for which indemnification may be sought hereunder, Juno shall promptly, but no longer than [**] Business Days' later, notify Editas of such Claim and as soon as reasonably practicable thereafter provide Editas with all documentation and information Juno Indemnitor may have in its possession with regard thereto. Unless and until the Institutions Indemnitees and MIT Indemnitees have release Editas from all Liabilities arising out of or in connection with the Claim for which indemnification may be sought hereunder, Juno shall not take, and shall cause its Affiliates and Juno Sublicensees not to take, any action in the defense or settlement of such Claim without Editas' prior written consent, not to be unreasonably withheld or delayed. Neither Juno, nor any of its Affiliates or Juno Sublicensees, may settle such Claim on terms that admit any liability on the part of Editas, impose any obligation on Editas, or diminish the rights of Editas without Editas' prior written consent, which may be given or withheld in Editas' sole discretion.

12.1.3 Procedures. With respect to any Claim for which indemnification is sought by an Institution Indemnitee or MIT Indemnitee pursuant to the terms of the Harvard-Broad License as incorporated herein, Juno acknowledges and agrees that the provisions of the Harvard-Broad License relating to the procedures for indemnification shall apply as if such procedures were written in full herein, with the defined terms "Company" being deemed to refer to Juno, "Indemnitor" being deemed to refer to Juno and each of its Affiliates and Juno Sublicensees and "Indemnitees" being deemed to refer to Institution Indemnitees and MIT Indemnitees.

12.1.4 HHMI Indemnity. HHMI Indemnitees shall be indemnified, defended by counsel acceptable to HHMI, and held harmless by Juno, from and against any Claim. The previous sentence shall not apply to any Claim that is determined with finality by a court of competent jurisdiction to result solely from the gross negligence or willful misconduct of an HHMI

Indemnitee. Notwithstanding any other provision of this Agreement, Juno's obligation to defend, indemnify and hold harmless the HHMI Indemnitees under this paragraph shall not be subject to any limitation or exclusion of liability or damages or otherwise limited in any way.

12.1.5 MGH Indemnity. Juno shall indemnify, defend and hold harmless MGH Indemnitees against any Claim, except to the extent any such Claim results directly from the gross negligence or willful misconduct of an MGH Indemnitee. With respect to any Claim for which indemnification is sought by an MGH Indemnitee pursuant to the terms of the MGH License as incorporated herein, Juno acknowledges and agrees that the provisions of the MGH License relating to the procedures for indemnification shall apply as if such procedures were written in full herein, with the defined terms "Company" being deemed to refer to Juno, "Hospital" being deemed to refer to MGH and "Indemnitee(s)" being deemed to refer to MGH Indemnitee(s).

12.1.6 Duke Indemnity. If the Editas IP includes Editas IP licensed by Editas from Duke, Juno shall indemnify, defend and hold harmless Duke Indemnitees against from and against any claim, liability, cost, expense, damage, deficiency, loss or obligation, of any kind or nature (including, without limitation, reasonable attorneys' fees and other costs and expenses of defense) (hereinafter referred to as "Duke Claim" or "Duke Claims") based upon, arising out of, or otherwise relating to Juno's activities under this Agreement, including, but not limited to, any cause of action relating to product liability, Juno's use of the patent rights and/or know-how covered by the Duke In-License, and/or Juno's exercise of the license(s) granted herein and/or Juno's failure to comply with any governmental law, rule or regulation with respect to Licensed Products, except to the extent any such Duke Claim that is determined with finality by a court of competent jurisdiction that such Claim results from the gross negligence or willful misconduct of a Duke Indemnitee. With respect to any Duke Claim for which indemnification is sought by a Duke Indemnitee pursuant to the terms of the Duke In-License as incorporated herein, Juno acknowledges and agrees that the provisions of the Duke In-License relating to the procedures for indemnification shall apply as if such procedures were written in full herein, with the defined terms "Licensee" being deemed to refer to Juno, "DUKE" being deemed to refer to Duke and "DUKE Indemnitee(s)" being deemed to refer to Duke Indemnitee(s).

12.2 Use of Names. Except as provided below in this Section 12.2, Juno shall not, and shall ensure that its Affiliates and Juno Sublicensees shall not, use or register the name "The Broad Institute, Inc.," "Wyss Institute for Biologically Inspired Engineering at Harvard University," "President and Fellows of Harvard College," "Massachusetts Institute of Technology," "Lincoln Laboratory," "Duke University," or any variation, adaptation, or abbreviation thereof (alone or as part of another name) or any logos, seals, insignia or other words, names, symbols or devices that identify Institutions or any Institutions school, unit, division or affiliate ("Institution Names") for any purpose except with the prior written approval of, and in accordance with restrictions required by, the applicable Institution, Duke or MIT, as applicable. Juno further agrees, except as provided below in this Section 12.2, not to use the name of any other In-License Counterparty for any purpose except with the prior written approval of, and in accordance with the restrictions required by, the applicable In-License Counterparty. Without limiting the foregoing, Juno shall, and shall ensure that its Affiliates and Juno Sublicensees shall, cease all use of Institution Names and names of other In-License Counterparties as permitted under or in connection with this Agreement on the termination or expiration of this Agreement except as otherwise approved in writing by the applicable In-Licensor, Institution, Duke or MIT, as applicable. This restriction shall not apply to

any information required by law to be disclosed to any governmental entity. Juno shall not use or register the name "Howard Hughes Medical Institute" or any variation, adaptation, or abbreviation thereof (alone or as part of another name) or any logos, seals, insignia or other words, names, symbols or devices that identify HHMI or any unit of HHMI ("HHMI Names") or of any HHMI employee (including [**]) in a manner that reasonably could constitute an endorsement of a commercial product or service; but that use for other purposes, even if commercially motivated, is permitted provided that (1) the use is limited to accurately reporting factual events or occurrences, and (2) any reference to an HHMI Name or any HHMI employees (including [**]) in press releases or similar materials intended for public release is approved by HHMI in advance

12.3 Intended Third Party Beneficiaries.

12.3.1 Juno acknowledges and agrees that for so long as the Editas IP includes Editas IP licensed by Editas from Institutions, (a) Institutions are intended third party beneficiaries of this Agreement for the purpose of enforcing all patent challenge, indemnification, and insurance provisions of this Agreement and enforcing the right to terminate this Agreement for breach of the patent challenge, indemnification or insurance provisions of this Agreement and (b) HHMI and MIT are intended third party beneficiaries of this Agreement for the purpose of enforcing HHMI's and MIT's respective rights, including indemnification and insurance provisions, under the Harvard-Broad License.

12.3.2 Juno acknowledges and agrees that for so long as the Editas IP includes Editas IP licensed by Editas from MGH, MGH is an intended third party beneficiary of this Agreement for the purpose of enforcing all patent challenge, indemnification, and insurance provisions of this Agreement and enforcing the right to terminate this Agreement for breach of the patent challenge, indemnification or insurance provisions of this Agreement.

12.3.3 Juno acknowledges and agrees that for so long as the Editas IP includes Editas IP licensed by Editas from Duke, Duke is an intended third party beneficiary of this Agreement for the purpose of enforcing all indemnification and insurance provisions of this Agreement and enforcing the right to terminate this Agreement for breach of the indemnification or insurance provisions of this Agreement.

12.4 Retained Rights of In-License Counterparties. Notwithstanding anything in this Agreement to the contrary, all of the licenses granted to Juno hereunder shall be subject to the rights retained by Institutions, MGH, Duke and In-Licensors under the terms of the applicable In-License Agreements, in each case that cover Editas IP to which Juno is receiving a sublicense hereunder.

12.5 Inclusion of IP Subject to In-Licenses. Notwithstanding anything in this Agreement to the contrary, in the event that any Editas IP is subject to an In-License Agreement (other than a Foundational In-License or the Duke In-License), such Editas IP shall not be included within the licenses granted to Juno herein unless (a) Juno first agrees in writing to any amendments or modifications to this Agreement as Editas may reasonably request in order to comply with the terms of such In-License Agreement and (b) Juno agrees in writing to the payment of any sublicense-by-sublicense and pass-through financial obligations under such In-License Agreement, provided, however, that to the extent such In-License Agreement covers Patent Rights

that claim the [**] Reagent used in the manufacture of a Licensed Product as generated and delivered by Editas under the Research Program, or the use of such [**] Reagent as a genome editing construct, then the terms of Section 8.4 shall apply to the payment terms. Editas shall promptly provide to Juno a written description, and a true and correct copy of such In-License (redacted as to terms not material to a sublicensee thereunder), promptly after Editas enters into such In-License Agreement.

ARTICLE 13
TERM AND TERMINATION

13.1 Term. Unless earlier terminated, this Agreement shall continue in full force and effect, on a Product-by-Product and country-by-country basis until the date no further payments are due under ARTICLE 6 above (the "Term"). Following the expiration of the Term, the licenses granted to Juno pursuant to Sections 4.2(a), 4.2(c) and 4.2(d) shall become perpetual, fully paid-up, and non-exclusive licenses with respect to such Product and such country.

13.2 Termination for Breach. Subject to the provisions of this Section 13.2, either Party may terminate the Research Program and this Agreement if the other Party has materially breached or defaulted in the performance of any of its material obligations hereunder, and such default shall have continued for sixty (60) days after written notice thereof was provided to the breaching Party by the other Party. Any termination shall become effective at the end of such sixty (60) day period unless the breaching Party has cured any such breach or default prior to the expiration of the sixty (60) day period. Without limiting the generality of the terms "material breach" or "default in the performance of a material obligation hereunder," the failure of Juno to comply with the patent challenge, indemnification or insurance provisions of this Agreement shall constitute a material breach and a default in the performance of a material obligation hereunder by Juno.

13.3 Termination upon Notice. Juno may terminate this Agreement upon not less than six (6) months prior written notice to Editas.

13.4 Termination for Bankruptcy. To the extent allowed under applicable law, either Party shall have the right to terminate this Agreement in the event of the commencement of any proceeding in or for bankruptcy, insolvency, dissolution or winding up by or against the other Party (other than pursuant to a corporate restructuring) that is not dismissed or otherwise disposed of within one hundred and eighty (180) days thereafter.

13.5 Termination for Patent Challenge. In the event Juno directly or indirectly brings, assumes, or participates in, or knowingly, willfully or recklessly assists in bringing, a Patent Challenge, then Editas shall be entitled to terminate this Agreement in its entirety immediately upon written notice to Juno.

13.6 Termination upon Termination of In-License. In the event of termination of an In-License Agreement, Editas promptly shall notify Juno. Juno acknowledges and agrees that except as otherwise agreed in writing by the applicable In-License Counterparty, the licenses set forth herein with respect to the Editas IP covered by such In-License, and all sublicenses and any further sublicenses granted by Juno Sublicensees with respect to such Editas IP, shall terminate immediately or as otherwise provided in accordance with the terms of the applicable In-License

Agreement, except to the extent such In-License Agreement provides for the survival of the licenses set forth herein with respect to the Editas IP covered by such In-License, and sublicenses and any further sublicenses granted by Juno Sublicensees with respect to such Editas IP. If requested by Juno, Editas shall provide Juno with reasonable assistance in its efforts to satisfy such conditions for survival or to seek a waiver of termination from the applicable In-License Counterparty. In the case that a Foundational In-License or the Duke In-License is terminated and Juno obtains a license directly from the applicable Institution or Duke, as the case may be, then the royalties payable under Section 6.6 shall automatically be reduced by the amount of the royalties that Editas was paying to such Institution under the applicable Foundational In-License or Duke In-License.

13.7 Effect of Termination.

(a) Accrued Rights and Obligations. Termination of this Agreement for any reason shall not release either Party from any liability which, at the time of such expiration or termination, has already accrued to the other Party or which is attributable to a period prior to such expiration or termination nor preclude either Party from pursuing any rights and remedies it may have hereunder or at law or in equity with respect to any breach of this Agreement.

(b) Return of Materials. Upon any termination of this Agreement, Juno and Editas shall promptly return to the other all Confidential Information received from the other Party, except as reasonably necessary to exercise any surviving rights and except for one copy of which may be retained for archival purposes.

(c) Stock on Hand. If this Agreement terminates for any reason, Juno, its Affiliates and its Sublicensees will have the right to sell or otherwise dispose of the stock of any Licensed Product being commercially sold by Juno and on hand as of the effective date of such termination during the [**] month period after the effective date of such termination.

(d) Effect of Termination by Juno With Cause. If Juno terminates this Agreement with cause pursuant to Section 13.2, then notwithstanding such termination: (i) the licenses and rights to Juno under Section 4.1 shall continue, (ii) Juno's milestones and royalty obligations under Sections 6.4 and 6.6 shall continue, and (iii) Juno shall continue to have the sole right to prosecute and maintain, and to enforce, the Collaboration Patents as set forth in Sections 8.2 and 8.3.

13.8 Survival Sections. Sections 2.6(a), 2.8(a), 2.8(c), 4.8, 5.6, 7.4, 7.8, 8.1, 8.2, 10.3, 12.1, 12.3, 12.4, 14.1, 14.2, 14.3, 14.7, 14.8, 14.11, 14.12, 14.13, 1.4.14 and 14.15 and, to the extent applicable in connection with the activities permitted under Section 13.7(c), Sections 5.3, 5.4, 6.5(a) – Table E, 6.5(b) – Table E, 6.5(c) – Table D, 6.6, 7.1, 7.2, 7.3 and 7.5 and Articles 1, 9, 11 and 13 shall survive the expiration or termination of this Agreement for any reason.

13.9 Termination Not Sole Remedy. Termination is not the sole remedy under this Agreement and, whether or not termination is effected, all other remedies shall remain available except as agreed to otherwise herein.

ARTICLE 14
MISCELLANEOUS

14.1 Governing Laws; Venue; Jurisdiction. This Agreement shall be governed by, interpreted and enforced in accordance with the laws of the State of New York, without regard to principles of conflicts or choice of laws that would cause the application of the laws of another jurisdiction. Subject to Section 13.2 disputes arising out of this Agreement shall be subject to the exclusive jurisdiction and venue of the state and federal courts located in the New York, New York (and the appellate courts thereof), and each Party hereby irrevocably consents to the personal and non-exclusive jurisdiction and venue thereof.

14.2 Disputes. If any dispute, claim or controversy of any nature arising out of or relating to this Agreement, including any action or claim based on tort, contract or statute, or concerning the interpretation, effect, termination, validity, performance or breach of this Agreement (each, a "Dispute"), arises between the Parties and the Parties cannot resolve such Dispute within [**] days of a written request by either Party to the other Party, the Parties agree to refer the Dispute to the respective Chief Executive Officers of each Party for resolution. If, after an additional [**] days, such representatives have not succeeded in negotiating a resolution of the Dispute, and a Party wishes to pursue the matter, each such dispute, controversy or claim will be submitted to the Judicial Arbitration and Mediation Service ("JAMS") or its successor for non-binding mediation in New York, New York before a single mediator. The Parties will cooperate with JAMS and with one another in selecting a mediator from the JAMS panel of neutrals and in scheduling the mediation proceedings. The Parties agree that they will participate in the mediation in good faith and that they will share equally in its costs. Any Dispute that cannot be resolved through mediation, and any Dispute with respect to which a Party is claiming equitable relief, shall be resolved by a court of competent jurisdiction.

14.3 Independent Contractors. The relationship of the Parties under this Agreement is that of independent contractors. Neither Party shall be deemed to be an employee, agent, partner, franchisor, franchisee, joint venture or legal representative of the other for any purpose as a result of this Agreement or the transactions contemplated thereby, and neither shall have the right, power or authority to create any obligation or responsibility on behalf of the other.

14.4 Assignment.

14.4.1 The Parties agree that neither this Agreement nor their rights and obligations under this Agreement shall be delegated, assigned or otherwise transferred to a third party, in whole or part, whether voluntarily or by operation of law, including by way of sale of assets, merger or consolidation, without prior written consent of the other Party. Notwithstanding the foregoing, a Party may, without such consent, assign this Agreement and its rights and obligations hereunder in their entirety (a) to an Affiliate, or (b) in connection with a Change of Control. Subject to the foregoing, this Agreement shall be binding on and inure to the benefit of the Parties and their permitted successors and assigns.

14.4.2 Without limiting the foregoing, Juno agrees that this Agreement may not be assigned by Juno, whether by operation of law or otherwise, without the consent of the Institutions, except that Juno may assign or transfer this Agreement without the consent of the

Institutions, to a successor in interest of all or substantially all of Juno's assets or business related to the Licensed Products or this Agreement, whether by merger, consolidation, sale of assets, or Change of Control or other transaction, provided that (a) Juno shall provide the Institutions with a written notice of such assignment or Change of Control including the identity of the assignee, transferee or controlling party, and a copy of the assignment and assumption agreement or other documentary evidence sufficient to demonstrate Juno's compliance with this Section 14.4.2 within [**] days after such assignment or Change of Control, and (b) such assignee or transferee agrees in writing to assume the obligations to the Institutions and HHMI that are being assigned or transferred. Failure of an assignee to agree to be bound by the terms hereof or failure of Juno to notify Institutions and provide copies of assignment documentation as specified above shall be grounds for termination of this Agreement for material breach.

14.4.3 Juno may assign or transfer this Agreement: (a) without the consent of MGH, to an Affiliate of Juno or in connection with the transfer or sale of all or substantially all of Juno's assets or business related to the Licensed Products and/or this Agreement, whether by merger, consolidation, sale of assets, change in control or other transaction, provided that Juno promptly shall provide MGH with a written notice of such assignment including the identity of the assignee or transferee and such assignee or transferee agrees in writing to assume the obligations to MGH that are being assigned or transferred; and (b) in any other circumstance, only with the prior written consent of MGH, such consent not to be unreasonably withheld, conditioned or delayed. Juno shall notify MGH in writing of any such assignment and provide a copy of the assignment and assumption agreement or other documentary evidence sufficient to demonstrate Juno's compliance with this Section 14.4.3 within [**] days after such assignment. Failure of an assignee to agree to be bound by the terms hereof or failure of Juno to notify Hospital and provide copies of assignment documentation shall be grounds for termination of this Agreement for material breach.

14.4.4 Any attempted delegation, assignment or transfer in violation of this Section 14.4shall be null and void.

14.5 Force Majeure. If either Party is prevented from or delayed in the performance of any of its obligations hereunder by reason of acts of God, war, strikes, riots, storms, fires, earthquake, power shortage or failure, failure of the transportation system, or any other cause whatsoever beyond the reasonable control of the Party ("Force Majeure Event"), the Party so prevented or delayed shall be excused from the performance of any such obligation during a period that is reasonable in light of the Force Majeure Event, but no less than the duration of the Force Majeure Event itself.

14.6 Right to Develop Independently. Except as otherwise expressly set forth in this Agreement, nothing in this Agreement shall impair either Party's right to independently acquire, license, develop for itself, or have others develop for it, intellectual property and technology performing similar functions as the other Party's intellectual property or to market and distribute products or services based on such other intellectual property and technology.

14.7 Notices. Any notices required or permitted under this Agreement or required by law must be in writing by first class certified mail or international express delivery service (such as DHL), in each case properly posted and fully prepaid to the applicable address below, or to such

other address as either Party may substitute by written notice under this Section. Notice shall be deemed to have been given when delivered or, if delivery is not accomplished by reason or some fault of the addressee, when tendered.

If to Juno:	Juno Therapeutics, Inc. 307 Westlake Avenue North Seattle, WA 98109 Attention: General Counsel
If to Editas:	Editas Medicine, Inc. 300 Third Street, First Floor Cambridge, MA 02142 Attention: Chief Executive Officer
	With a copy to:
	Editas Medicine, Inc. 300 Third Street, First Floor Cambridge, MA 02142 Attention: General Counsel

14.8 Interpretation. The captions and headings to this Agreement are for convenience only, and are to be of no force or effect in construing or interpreting any of the provisions of this Agreement. Unless specified to the contrary, references to Articles, Sections or Exhibits mean the particular Articles, Sections or Exhibits to this Agreement and references to this Agreement include all Exhibits hereto. Unless context otherwise clearly requires, whenever used in this Agreement: (a) the words "include" or "including" shall be construed as incorporating, also, "but not limited to" or "without limitation;" (b) the word "day" or "year" means a calendar day or year unless otherwise specified; (c) the word "notice" shall mean notice in writing (whether or not specifically stated) and shall include notices, consents, approvals and other written communications contemplated under this Agreement; (d) the words "hereof," "herein," "hereby" and derivative or similar words refer to this Agreement (including any Exhibits); (e) the word "or" shall be construed as the inclusive meaning identified with the phrase "and/or;"(f) provisions that require that a Party, the Parties or a committee hereunder "agree," "consent" or "approve" or the like shall require that such agreement, consent or approval be specific and in writing, whether by written agreement, letter, approved minutes or otherwise; (g) words of any gender include the other gender; (h) words using the singular or plural number also include the plural or singular number, respectively; and (i) the word "law" (or "laws") when used herein means any applicable, legally binding statute, ordinance, resolution, regulation, code, guideline, rule, order, decree, judgment, injunction, mandate or other legally binding requirement of a government entity, together with any then-current modification, amendment and re-enactment thereof, and any legislative provision substituted therefor. The Parties and their respective counsel have had an opportunity to fully negotiate this Agreement. If any ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the Parties, and no presumption or burden of proof shall arise favoring or disfavoring any Party by virtue of the authorship of any provision of

this Agreement. No prior draft of this Agreement shall be used in the interpretation or construction of this Agreement.

14.9 Compliance with Laws. Each Party shall furnish to the other Party any information requested or required by that Party during the term of this Agreement or any extensions hereof to enable that Party to comply with the requirements of any U.S. or foreign, state and/or government agency.

14.10 Further Assurances. At any time or from time to time on and after the date of this Agreement, a Party shall at the written and reasonable request of the requesting Party: (a) deliver to the requesting Party such records, data or other documents consistent with the provisions of this Agreement; (b) execute, and deliver or cause to be delivered, all such consents, documents or further instruments of transfer or license; and (c) take or cause to be taken all such actions, as the requesting Party may reasonably deem necessary or desirable in order for the requesting Party to obtain the full benefits of this Agreement and the transactions contemplated hereby.

14.11 Use of Names and Marks. Neither Party shall use the name, trade name, trademark or other designation of the other Party or its employees in connection with any products, promotion or advertising without the prior written permission of the other Party. For clarity, either Party may, without the other Party's prior permission, reasonably utilize the other Party's name or names of its employees in statements of fact, in legal proceedings, patent filings, and regulatory filings.

14.12 Severability. If any provision, or portion thereof, in this Agreement is held to be invalid or unenforceable to any extent, such provision of this Agreement shall be enforced to the maximum extent permissible by applicable law so as to effect the intent of the Parties, and the remainder of the Agreement shall remain in full force and effect. The Parties shall negotiate in good faith a valid and enforceable substitute provision for any invalid or unenforceable provision that most nearly achieves the intent and economic effect of such invalid or unenforceable provision as if it were enforceable.

14.13 Waiver. Any waiver of any provision of this Agreement or of a Party's rights or remedies under this Agreement must be in writing to be effective. Failure, neglect, or delay by a Party to enforce the provisions of this Agreement or its rights or remedies at any time, shall not be construed as a waiver of such Party's rights under this Agreement and shall not in any way affect the validity of the whole or any part of this Agreement or prejudice such Party's right to take subsequent action. No exercise or enforcement by either Party of any right or remedy under this Agreement shall preclude the enforcement by such Party of any other right or remedy under this Agreement or that such Party is entitled by law to enforce.

14.14 Entire Agreement; Modification. This Agreement (including the Exhibits and any amendments hereto signed by both Parties) constitutes the entire understanding and agreement between the Parties with respect to the subject matter hereof and supersedes any and all prior and contemporaneous negotiations, representations, agreements, and understandings, written or oral, that the Parties may have reached with respect to the subject matter hereof. This Agreement may not be altered, amended or modified in any way except by a writing (excluding email or similar electronic transmissions) signed by the authorized representatives of both Parties.

14.15 Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Once signed, any reproduction of this Agreement made by reliable means (e.g., pdf, photocopy, facsimile) shall be considered an original.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed by their authorized representatives as of the Effective Date.

JUNO THERAPEUTICS, INC.		EDITAS MEDICINE, INC.	
By:	/s/ H. Bishop	By:	/s/ Katrine S. Bosley
Name:	H. Bishop	Name:	Katrine S. Bosley
Title:	C.E.O.	Title:	President & CEO

EXHIBIT A

Initial Research Plan

See Attached Sheets.

EXHIBIT A

Initial Research Plan

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. A total of 12 pages were omitted. [**]

EXHIBIT B

Technology Transfer Plan

Schedule 1.33

List of Editas Solely Owned Patents as of the Effective Date

See Attached Sheets.

Category	Editas reference number	CaseNumber	SubCase	AppNumber	FilDate	Title
[**]	[**]	[**]	[**]	[**]	[**]	[**]

Confidential Materials omitted and filed separately with the Securities and Exchange Commission. A total of 9 pages were omitted. [**]

Schedule 2.7(a)

List of the [**] Engineered T-Cell Targets

[**]

Schedule 2.7(b)

List of the [**] Engineered T-Cell Targets

[**]

Schedule 2.7(d)

List of the [**] Engineered T-Cell Targets

[**]

Schedule 9.4

Press Release

See Attached Sheets.

ARTICLE 15

FOR IMMEDIATE RELEASE

Juno Therapeutics and Editas Medicine Announce Exclusive Collaboration to Create Next-Generation CAR T and TCR Cell Therapies

Alliance combines Editas' genome editing technology and expertise and Juno's extensive CAR T and TCR platforms

Seattle, WA and Cambridge, MA, May 27, 2015 – Juno Therapeutics, Inc., a leading biopharmaceutical company focused on re-engaging the body's immune system to revolutionize the treatment of cancer, and Editas Medicine, a leader in genome editing, today announced an exclusive collaboration focused on creating chimeric antigen receptor (CAR T) and high-affinity T cell receptor (TCR) therapies to treat cancer. The companies will pursue three research programs together utilizing Editas' genome editing technologies, including CRISPR/Cas9, with Juno's CAR and TCR technologies.

"Encouraged by the clinical results we have seen to date with our product candidates, we are committed to accessing and investing in leading science to create next generation therapeutics that maximize benefits and increase the breadth of cancers we address," said Hans Bishop, CEO, Juno Therapeutics. "Editas' disruptive genome editing technology may unlock the ability of CAR T and TCR technologies to address a much wider range of cancers, giving hope to countless patients and families waiting for treatments."

"We are impressed and inspired by the scope and sophistication of Juno's scientific vision and the exceptional product development experience of the Juno team," said Katrine Bosley, CEO, Editas Medicine. "They are intensely focused on advancing T cell based therapies for cancer patients, and we share their ambition to significantly expand the types of cancers that can be treated with this approach."

Under the terms of the agreement, Juno will pay Editas an upfront payment of $25 million and up to $22 million in research support over the next five years across the three programs in the alliance. Editas is also eligible to receive future research, regulatory, and commercial sales milestones in excess of $230 million for each program. Following the approval of any products resulting from the alliance, Editas is also eligible to receive tiered royalties.

About Juno's CAR T and TCR Platforms
Juno is developing cell-based immunotherapies based on its chimeric antigen receptor, or CAR, and high-affinity T cell receptor, or TCR, platform to genetically engineer T cells to recognize and kill cancer cells. T cells are a type of white blood cells that identify and

kill infected or abnormal cells, including cancer cells, in healthy individuals. Juno leverages its CAR and TCR platform to activate a patient's own T cells so that they attack cancer cells. Through genetic engineering, a gene is inserted for a particular CAR or TCR construct into the T cell enabling it to better recognize cancer cells. The CAR technology directs T cells to recognize cancer cells based on the expression of specific proteins located on the cell surface, whereas the TCR technology provides the T cells with a specific T cell receptor to recognize protein fragments derived from either the surface or inside the cell. CAR constructs typically use a single chain variable fragment, or scFv, to recognize a protein of interest. The modified T cells can be infused into the patient or frozen and stored for later infusion.

About Genome Editing
Genome editing enables sequence-targeted modifications of DNA. Recent advances in this field have made it possible to modify almost any gene in the human body with the ability to directly turn on, turn off or edit disease-causing genes. This has the potential to address diseases that have previously been intractable to traditional gene therapy, gene knock-down or other genome modification techniques.

The CRISPR (clustered, regularly interspaced short palindromic repeats)/Cas9 (CRISPR associated protein 9) system, the newest genome editing approach, uses a protein-RNA complex composed of an enzyme known as Cas9 bound to a guide RNA molecule that has been designed to recognize a particular DNA sequence. The RNA molecules guide the Cas9 complex to the location in the genome that requires repair. CRISPR/Cas9 uniquely enables highly efficient knock-out, knock-down or selective editing of defective genes in the context of their natural promoters, unlocking the potential to treat the root cause of a broad range of diseases.

About Juno
Juno Therapeutics, Inc. is building a fully integrated biopharmaceutical company focused on revolutionizing medicine by re-engaging the body's immune system to treat cancer. Founded on the vision that the use of human cells as therapeutic entities will drive one of the next important phases in medicine, Juno is developing cell-based cancer immunotherapies based on chimeric antigen receptor and high-affinity T cell receptor technologies to genetically engineer T cells to recognize and kill cancer. Juno is developing multiple cell-based product candidates to treat a variety of B-cell malignancies as well as solid tumors. Several product candidates have shown compelling evidence of tumor shrinkage in the clinical trials in refractory leukemia and lymphoma conducted to date. Juno's long-term aim is to improve and leverage its cell-based platform to develop new product candidates that address a broader range of cancers and human diseases. Juno brings together innovative technologies from some of the world's leading research institutions, including the Fred Hutchinson Cancer Research Center, Memorial Sloan Kettering Cancer Center, Seattle Children's Research Institute, and The National Cancer Institute.

About Editas Medicine
Editas Medicine is a leading genome editing company and part of a transformational new area of health care – genomic medicine. The company was founded by pioneers and world leaders in genome editing bringing specific expertise in CRISPR/Cas9 and TALENs technologies. The company's mission is to translate its proprietary technology into novel solutions to treat a broad range of genetically driven diseases. For more information, visit www.editasmedicine.com.

Forward Looking Statements for Juno
This press release contains forward-looking statements, including statements regarding commitments, clinical benefits, technology, company capabilities, hope, and vision, as well as the impact, benefits, and funding of collaboration between Juno and Editas. Forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from such forward-looking statements, and reported results should not be considered as an indication of future performance. These risks and uncertainties include, but are not limited to, risks associated with: the success, cost, and timing of Juno's product development activities and clinical trials, and Juno's ability to finance these activities and trials; Juno's ability to obtain regulatory approval for and to commercialize its product candidates; Juno's ability to establish a commercially-viable manufacturing process and manufacturing infrastructure; regulatory requirements and regulatory developments; success of Juno's competitors with respect to competing treatments and technologies; Juno's dependence on third-party research institution collaborators and other contractors in Juno's research and development activities, including for the conduct of clinical trials and the manufacture of Juno's product candidates; Juno's ability to obtain, maintain, or protect intellectual property rights related to its product candidates; amongst others. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to Juno's business in general, see Juno's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 19, 2015 and Juno's other periodic reports filed with the Securities and Exchange Commission. These forward-looking statements speak only as of the date hereof. Juno disclaims any obligation to update these forward-looking statements.

# # #

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Dan Budwick
Pure Communications, Inc.
(973) 271-6085
dan@purecommunicationsinc.com

Exhibit 31.1

CERTIFICATIONS

I, Katrine S. Bosley, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Editas Medicine, 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: November 8, 2018

By: /s/ Katrine S. Bosley
Katrine S. Bosley
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Andrew A.F. Hack, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Editas Medicine, 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: November 8, 2018

By: /s/ Andrew A. F. Hack
Andrew A.F. Hack, M.D., Ph.D.
Chief Financial Officer
(Principal Financial 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 Editas Medicine, Inc. (the "Company") for the period ended September 30, 2018, 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: November 8, 2018

By: /s/ Katrine S. Bosley
Katrine S. Bosley
President and Chief Executive Officer

Date: November 8, 2018

By: /s/ Andrew A.F. Hack
Andrew A.F. Hack, M.D., Ph.D.
Chief Financial Officer