UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 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, 2015

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: 001-35966

bluebird bio, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**13-3680878**
(State or Other Jurisdiction of Incorporation or Organization)	**(IRS Employer Identification No.)**
150 Second Street Cambridge, Massachusetts	**02141**
(Address of Principal Executive Offices)	**(Zip Code)**

(339) 499-9300
(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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐

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

As of October 30, 2015, there were 36,676,917 shares of the registrant's Common Stock, par value $0.01 per share, outstanding.

This Quarterly Report on Form 10-Q contains forward-looking statements that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause our results to differ materially from those expressed or implied by such forward-looking statements. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q are forward-looking statements. In some cases, you can identify forward-looking statements by words such as "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "seek," "should," "target," "will," "would," or the negative of these words or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- the initiation, timing, progress and results of our preclinical and clinical studies, and our research and development programs;
- our ability to advance product candidates into, and successfully complete, clinical studies;
- our ability to advance our viral vector manufacturing and transduction capabilities;
- the timing or likelihood of regulatory filings and approvals for our product candidates;
- the commercialization of our product candidates, if approved;
- the pricing and reimbursement of our product candidates, if approved;
- the implementation of our business model, strategic plans for our business, product candidates and technology;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates and technology;
- estimates of our expenses, future revenues, capital requirements and our needs for additional financing;
- the potential benefits of strategic collaboration agreements and our ability to enter into strategic arrangements;
- our ability to maintain and establish collaborations or obtain additional grant funding;
- our financial performance;
- developments relating to our competitors and our industry; and
- other risks and uncertainties, including those listed under Part II, Item 1A. Risk Factors.

Any forward-looking statements in this Quarterly Report on Form 10-Q reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under Part II, Item 1A. Risk Factors and elsewhere in this Quarterly Report on Form 10-Q. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

This Quarterly Report on Form 10-Q also contains estimates, projections and other information concerning our industry, our business, and the markets for certain diseases, including data regarding the estimated size of those markets, and the incidence and prevalence of certain medical conditions. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources.

bluebird bio, Inc.
Form 10-Q
For the three and nine months ended September 30, 2015

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

bluebird bio, Inc.

Condensed Consolidated Balance Sheets
(unaudited)
(in thousands, except par value amounts)

	September 30, 2015	December 31, 2014
Assets		
Current assets:		
Cash and cash equivalents	$ 417,510	$ 347,845
Marketable securities	289,954	125,710
Deferred tax assets	734	1,913
Prepaid expenses and other current assets	4,957	4,521
Total current assets	713,155	479,989
Marketable securities	194,247	18,448
Property and equipment, net	61,564	15,740
Intangible assets, net	25,397	28,219
Goodwill	13,128	13,128
Restricted cash and other non-current assets	10,150	1,215
Total assets	$ 1,017,641	$ 556,739
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 3,469	$ 2,954
Accrued expenses and other current liabilities	24,219	14,649
Deferred revenue, current portion	5,889	25,375
Total current liabilities	33,577	42,978
Deferred rent, net of current portion	8,010	8,674
Deferred revenue, net of current portion	37,431	5,302
Contingent consideration, net of current portion	4,840	6,321
Construction financing lease obligation	43,777	—
Deferred tax liabilities	734	1,913
Other non-current liabilities	266	294
Total liabilities	128,635	65,482
Commitments and contingencies *(Note 7)*		
Stockholders' equity:		
Preferred stock, $0.01 par value, 5,000 shares authorized; 0 shares issued and outstanding at September 30, 2015 and December 31, 2014	—	—
Common stock, $0.01 par value, 125,000 shares authorized; 36,641 and 32,340 shares issued and outstanding at September 30, 2015 and December 31, 2014, respectively	366	323
Additional paid-in capital	1,155,482	638,389
Accumulated other comprehensive income (loss)	50	(71)
Accumulated deficit	(266,892)	(147,384)
Total stockholders' equity	889,006	491,257
Total liabilities and stockholders' equity	$ 1,017,641	$ 556,739

See accompanying notes to unaudited condensed consolidated financial statements.

bluebird bio, Inc.

Condensed Consolidated Statements of Operations and Comprehensive Loss
(unaudited)
(in thousands, except per share data)

	Three months ended September 30,		Nine months ended September 30,	
	2015	2014	2015	2014
Revenue:				
Collaboration revenue	$ 1,324	$ 6,250	$ 12,607	$ 18,750
Research and license fees	—	115	—	285
Total revenue	1,324	6,365	12,607	19,035
Operating expenses:				
Research and development	30,395	16,649	98,380	42,043
General and administrative	13,704	6,648	31,765	17,924
Change in fair value of contingent consideration	352	78	2,540	78
Total operating expenses	44,451	23,375	132,685	60,045
Loss from operations	(43,127)	(17,010)	(120,078)	(41,010)
Other income (expense), net	263	(20)	630	48
Loss before income taxes	(42,864)	(17,030)	(119,448)	(40,962)
Income tax (expense) benefit	(60)	—	(60)	11,797
Net loss	$ (42,924)	$ (17,030)	$ (119,508)	$ (29,165)
Other comprehensive income (loss):				
Unrealized gain (loss) on available-for-sale securities, net of tax	103	(74)	121	(74)
Comprehensive loss	$ (42,821)	$ (17,104)	$ (119,387)	$ (29,239)
Net loss per share - basic and diluted:	$ (1.18)	$ (0.61)	$ (3.52)	$ (1.14)
Weighted-average number of common shares used in computing net loss per share - basic and diluted:	36,384	28,115	33,979	25,593

See accompanying notes to unaudited condensed consolidated financial statements.

bluebird bio, Inc.

Condensed Consolidated Statements of Cash Flows
(unaudited)
(in thousands)

	Nine months ended September 30,	
	2015	**2014**
Operating activities		
Net loss	$ (119,508)	$ (29,165)
Adjustments to reconcile net loss to net cash used in operating activities:		
Non-cash benefit on release of tax valuation allowance	—	(11,797)
Depreciation and amortization	5,381	2,558
Stock-based compensation expense	31,011	7,757
Change in fair value of contingent consideration	2,015	78
Other non-cash items	528	246
Changes in operating assets and liabilities:		
Prepaid expenses and other assets	(2,717)	166
Accounts payable	623	(2,604)
Accrued expenses and other liabilities	5,320	5,613
Deferred revenue	12,643	(19,005)
Deferred rent	(640)	2,124
Net cash used in operating activities	(65,344)	(44,029)
Investing activities		
Restricted cash	(8,816)	209
Purchase of property and equipment	(3,618)	(6,303)
Acquisition of business, net of cash acquired	—	(4,673)
Purchases of marketable securities	(470,499)	(174,021)
Proceeds from maturities of marketable securities	132,239	—
Net cash used in investing activities	(350,694)	(184,788)
Financing activities		
Cash paid for contingent purchase price consideration	(453)	—
Proceeds from public offering of common stock, net of issuance costs	477,247	109,766
Proceeds from issuance of common stock	8,909	2,375
Net cash provided by financing activities	485,703	112,141
Increase (decrease) in cash and cash equivalents	69,665	(116,676)
Cash and cash equivalents at beginning of period	347,845	206,279
Cash and cash equivalents at end of period	$ 417,510	$ 89,603
Non-cash investing and financing activities:		
Assets acquired in acquisition	$ —	$ 43,759
Liabilities assumed in acquisition	$ —	$ 12,768
Equity issued in acquisition	$ —	$ 19,348
Construction financing lease obligation	$ 43,777	$ —
Purchases of property and equipment included in accounts payable and accrued expenses	$ 1,475	$ 1,298
Stock option exercise proceeds receivable	$ 24	$ 223

See accompanying notes to unaudited condensed consolidated financial statements.

1. Description of the business

bluebird bio, Inc. (the "Company" or "bluebird") was incorporated in Delaware on April 16, 1992, and is headquartered in Cambridge, Massachusetts. The Company develops, manufactures and intends to market therapies to safely and effectively deliver genes useful in the treatment of severe genetic and rare diseases and in the field of T cell-based immunotherapy. Since its inception, the Company has devoted substantially all of its resources to its research and development efforts relating to its product candidates, including activities to manufacture product candidates, conduct clinical studies of its product candidates, perform preclinical research to identify new product candidates and provide general and administrative support for these operations.

In June 2015, the Company sold 2,941,176 shares of common stock through an underwritten public offering at a price of $170.00 per share. The aggregate net proceeds received by the Company from the offering were $477.2 million, net of underwriting discounts and commissions and offering expenses of approximately $22.8 million.

2. Summary of significant accounting policies and basis of presentation

Basis of presentation and principles of consolidation

The accompanying condensed consolidated financial statements are unaudited and have been prepared by the Company in accordance with accounting principles generally accepted in the United States ("GAAP") as found in the Accounting Standards Codification ("ASC") and Accounting Standards Update ("ASU") of the Financial Accounting Standards Board ("FASB"). Certain information and footnote disclosures normally included in the Company's annual financial statements have been condensed or omitted. These interim condensed consolidated financial statements, in the opinion of management, reflect all normal recurring adjustments necessary for a fair presentation of the Company's financial position and results of operations for the interim periods ended September 30, 2015 and 2014.

The results of operations for the interim periods are not necessarily indicative of the results of operations to be expected for the full year. These interim financial statements should be read in conjunction with the audited financial statements as of and for the year ended December 31, 2014, and the notes thereto, which are included in the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission (the "SEC") on February 25, 2015.

The accompanying condensed consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries: Precision Genome Engineering, Inc. ("Pregenen"), bluebird bio France – SARL, bluebird bio Australia Pty Ltd. and bluebird bio Securities Corporation. All intercompany balances and transactions have been eliminated in consolidation. Any reference in these notes to applicable guidance is meant to refer to GAAP. The Company views its operations and manages its business in one operating segment. All material long-lived assets of the Company reside in the United States.

Summary of accounting policies

The significant accounting policies and estimates used in preparation of the condensed consolidated financial statements are described in the Company's audited financial statements as of and for the year ended December 31, 2014, and the notes thereto, which are included in the Company's Annual Report on Form 10-K. Beginning in the third quarter of 2015, the Company records certain estimated construction costs incurred and reported to us by a landlord as an asset and corresponding construction financing lease obligation on the condensed consolidated balance sheets. See Note 7, "Commitments and contingencies," for additional information. There have been no other material changes in the Company's significant accounting policies during the nine months ended September 30, 2015.

Contingent consideration

Each reporting period, the Company revalues the contingent consideration obligations associated with business combinations to their fair value and records within operating expenses increases in their fair value as contingent consideration expense and decreases in the fair value as contingent consideration income. Changes in contingent consideration result from changes in the assumptions regarding probabilities of successful achievement of related milestones, the estimated timing in which the milestones are achieved and the discount rate used to estimate the fair value of the liability. Contingent consideration may change significantly as development of the Company's programs in certain indications progress and additional data are obtained, impacting the Company's assumptions. The

assumptions used in estimating fair value require significant judgment. The use of different assumptions and judgments could result in a materially different estimate of fair value. See Note 4, "Fair value measurements," for additional information.

Net income (loss) per share

Basic net income (loss) per share is calculated by dividing net income (loss) attributable to common stockholders by the weighted average number of common shares outstanding during the period. Diluted net income per share is calculated by dividing the net income attributable to common stockholders by the weighted-average number of common equivalent shares outstanding for the period, including any dilutive effect from outstanding stock options, unvested restricted stock, restricted stock units, employee stock purchase plan, warrants, and acquisition holdback shares using the treasury stock method.

Use of estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts in the financial statements and accompanying notes. Estimates are used in the following areas, among others: fair value estimates used to assess potential impairment of long-lived assets, construction financing lease obligations, contingent consideration, stock-based compensation expense, accrued expenses, revenue and income taxes. Actual results could materially differ from those estimates.

3. Marketable securities

The following table summarizes the available-for-sale securities held at September 30, 2015 and December 31, 2014 (in thousands):

Description	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
September 30, 2015				
U.S. government agency securities and treasuries	$ 472,191	$ 126	$ (82)	$ 472,235
Certificates of deposit	11,960	7	(1)	11,966
Total	$ 484,151	$ 133	$ (83)	$ 484,201
December 31, 2014				
U.S. government agency securities	$ 131,589	$ 6	$ (59)	$ 131,536
Certificates of deposit	12,640	—	(18)	12,622
Total	$ 144,229	$ 6	$ (77)	$ 144,158

No available-for-sale securities held as of September 30, 2015 or December 31, 2014 had remaining maturities greater than three years.

4. Fair value measurements

The following table sets forth the Company's assets and liabilities that are measured at fair value on a recurring basis as of September 30, 2015 and December 31, 2014 (in thousands):

Description	Total	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
September 30, 2015				
Assets:				
Cash and cash equivalents	$ 417,510	$ 338,073	$ 79,437	$ —
Marketable securities:				
U.S. government agency securities and treasuries	472,235	—	472,235	—
Certificates of deposit	11,966	—	11,966	—
Total assets	$ 901,711	$ 338,073	$ 563,638	$ —
Liabilities:				
Contingent consideration	$ 8,336	$ —	$ —	$ 8,336
Total liabilities	$ 8,336	$ —	$ —	$ 8,336
December 31, 2014				
Assets:				
Cash and cash equivalents	$ 347,845	$ 347,845	$ —	$ —
Marketable securities:				
U.S. government agency securities	131,536	—	131,536	—
Certificates of deposit	12,622	—	12,622	—
Total assets	$ 492,003	$ 347,845	$ 144,158	$ —
Liabilities:				
Contingent consideration	$ 6,796	$ —	$ —	$ 6,796
Total liabilities	$ 6,796	$ —	$ —	$ 6,796

Cash and cash equivalents

The Company considers all highly liquid securities with original final maturities of three months or less from the date of purchase to be cash equivalents. As of September 30, 2015 and December 31, 2014, cash and cash equivalents comprise funds in cash, money market accounts and U.S. government agency securities.

Marketable securities

The amortized cost of available-for-sale securities is adjusted for amortization of premiums and accretion of discounts to maturity. At September 30, 2015 and December 31, 2014, the balance in the Company's accumulated other comprehensive income (loss) was composed solely of activity related to the Company's available-for-sale marketable securities. There were no realized gains or losses recognized on the sale or maturity of available-for-sale securities during the nine months ended September 30, 2015, and as a result, the Company did not reclassify any amounts out of accumulated other comprehensive income for the same period.

The aggregate fair value of securities held by the Company in an unrealized loss position for less than twelve months as of September 30, 2015 and December 31, 2014 was $197.0 million and $134.4 million, respectively. The Company has the intent and ability to hold such securities until recovery. The Company determined that there was no material change in the credit risk of the above investments. As a result, the Company determined it did not hold any investments with an other-than-temporary impairment as of September 30, 2015 and December 31, 2014.

Contingent consideration

In connection with the acquisition of Pregenen, the Company recorded contingent consideration pertaining to the amounts potentially payable to Pregenen's former equityholders pursuant to the Stock Purchase Agreement (the "Stock Purchase Agreement") by and among the Company, Pregenen and Pregenen's former equityholders. Contingent consideration is measured at fair value and is based on significant inputs not observable in the market, which represents a Level 3 measurement within the fair value hierarchy. The valuation of contingent consideration uses assumptions the Company believes would be made by a market participant. The Company assesses these estimates on an on-going basis as additional data impacting the assumptions is obtained. Future changes in the fair value of contingent consideration related to updated assumptions and estimates are recognized within the condensed consolidated statements of operations and comprehensive loss.

Contingent consideration may change significantly as development progresses and additional data are obtained, impacting the Company's assumptions regarding probabilities of successful achievement of related milestones used to estimate the fair value of the liability and the timing in which they are expected to be achieved. In evaluating the fair value information, considerable judgment is required to interpret the market data used to develop the estimates. The estimates of fair value may not be indicative of the amounts that could be realized in a current market exchange. Accordingly, the use of different market assumptions and/or different valuation techniques could result in materially different fair value estimates.

The significant unobservable inputs used in the measurement of fair value of the Company's contingent consideration are probabilities of successful achievement of preclinical, clinical and commercial milestones, the period in which these milestones are expected to be achieved ranging from 2016 to 2026 and discount rates ranging from 9.8% to 14.0%. Significant increases or decreases in any of the probabilities of success would result in a significantly higher or lower fair value measurement, respectively. Significant increases or decreases in these other inputs would result in a significantly lower or higher fair value measurement, respectively.

The table below provides a roll-forward of fair value of the Company's contingent consideration obligations, which include Level 3 inputs (in thousands):

	Nine Months Ended September 30, 2015
Beginning balance	$ 6,796
Additions	—
Changes in fair value	2,540
Payments	(1,000)
Ending balance	$ 8,336

As of September 30, 2015, $3.5 million of the fair value of the Company's total contingent consideration obligations was reflected as a component of accrued expenses and other current liabilities within the condensed consolidated balance sheets, with the remaining balance of $4.8 million reflected as a non-current liability. A $1.0 million milestone under the Stock Purchase Agreement was achieved during the second quarter of 2015, and was paid to the former equityholders of Pregenen during the third quarter of 2015.

5. Property and equipment, net

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

	September 30, 2015	December 31, 2014
Computer equipment and software	$ 1,092	$ 814
Office equipment	1,085	786
Laboratory equipment	9,747	7,223
Leasehold improvements	10,969	10,318
Construction-in-progress	44,527	—
Total property and equipment, gross	67,420	19,141
Less accumulated depreciation and amortization	(5,856)	(3,401)
Total Property and equipment, net	$ 61,564	$ 15,740

Construction-in-progress as of September 30, 2015 includes $43.8 million related to construction costs incurred by the landlord at 60 Binney Street in Cambridge, Massachusetts. Please refer to Note 7, "Commitments and contingencies," for further information.

6. Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consist of the following (in thousands):

	September 30, 2015	December 31, 2014
Employee compensation	$ 5,358	$ 4,943
Accrued goods and services	13,034	7,358
Accrued professional fees	1,063	428
Deferred rent, current portion	938	914
Contingent consideration, current portion	3,496	475
Other	330	531
Total accrued expenses and other current liabilities	$ 24,219	$ 14,649

The change in fair value of contingent consideration was primarily related to an increase in the probability of successful achievement of milestones expected to be achieved within the next twelve months.

7. Commitments and contingencies

The Company is party to various agreements, principally relating to licensed technology, that require future payments relating to milestones not met at September 30, 2015 and December 31, 2014 or royalties on future sales of specified products.

The Company enters into standard indemnification agreements in the ordinary course of business. Pursuant to these agreements, the Company indemnifies, holds harmless, and agrees to reimburse the indemnified party for losses suffered or incurred by the indemnified party, generally the Company's business partners or customers, in connection with claims by any third party with respect to the Company's products or business activities. The term of these indemnification agreements is generally perpetual any time after execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification agreements.

The Company's wholly-owned subsidiary bluebird bio France – SARL participates in the French Crédit d'Impôt Recherche ("CIR") program, which allows companies to monetize up to 30% of eligible research expenses. The Company received aggregate reimbursement of €1.6 million related to years 2012 through 2014. The Company has not yet applied for €0.5 million related to the nine months ended September 30, 2015, which is classified as a current asset within the condensed consolidated balance sheets as of September 30, 2015. The years 2012 through 2015 are open and subject to examination.

On June 30, 2014, the Company acquired Pregenen. During the second quarter of 2015, a $1.0 million milestone under the Stock Purchase Agreement was achieved, which resulted in a $1.0 million payment to the former equityholders of Pregenen during the third quarter of 2015. The Company may be required to make up to an additional $134.0 million in future contingent cash payments to the former equityholders of Pregenen upon the achievement of certain preclinical, clinical and commercial milestones related to the Pregenen technology, of which $14.0 million relates to preclinical milestones, $20.1 million relates to clinical milestones and $99.9 million relates to commercial milestones. In accordance with accounting for business combinations guidance, contingent consideration liabilities are required to be recognized on the condensed consolidated balance sheets at fair value. Estimating the fair value of contingent consideration requires the use of significant assumptions primarily relating to probabilities of successful achievement of certain preclinical, clinical and commercial milestones, the expected timing in which these milestones will be achieved and discount rates. The use of different assumptions could result in materially different estimates of fair value. See Note 4, "Fair value measurements," for additional information.

On June 3, 2013, the Company entered into a nine-year building lease for approximately 43,600 square feet of space located at 150 Second Street, Cambridge, Massachusetts, commencing on the earlier of the substantial completion of the Company's build-out work or January 1, 2014. This lease was amended in June 2014 to add an additional approximately 9,900 square feet. The lease originally had monthly lease payments of $0.2 million for the first 12 months, which increased to $0.3 million per month beginning in December 2014 due to the lease amendment, with annual rent escalations thereafter and provides a rent abatement of $0.2 million per month for the first six months. The total operating lease obligation of the noncancellable term of this agreement is $29.5 million. In addition, the lease provides a contribution from the landlord towards the initial build-out of the space of up to $7.8 million. The Company has the option to extend this lease by an additional five years. In accordance with the lease, the Company entered into a cash-collateralized irrevocable standby letter of credit in the amount of $1.3 million, naming the landlord as beneficiary. This letter of credit was reduced to $0.8 million during the second quarter of 2015, which was the first anniversary of the rent commencement date, and may be further reduced to $0.6 million upon the second anniversary of the rent commencement date.

On June 29, 2015, the Company entered into a lease agreement for additional office space located at 215 First Street, Cambridge, Massachusetts. Under the terms of the lease, the Company leased approximately 15,120 square feet starting on July 13, 2015 for $0.5 million per year in base rent, which is subject to a 3% annual rent increase plus certain operating expenses and taxes. The lease will continue until the end of the 60th full calendar month following the date the landlord delivers the premises to the Company, and includes early termination provisions that could allow the Company to terminate the lease at the end of the 20th full calendar month following the delivery of the premises if the Company meets certain conditions specified within the lease. Under the terms of the lease, the Company will also lease an additional 8,075 square feet of office space in the same premises starting on January 1, 2016 for an additional $0.3 million per year in base rent, which is subject to a 3% annual rent increase plus certain operating expenses and taxes.

On September 21, 2015, the Company entered into a lease agreement for additional office and laboratory space located in a building (the "Building") under construction at 60 Binney Street, Cambridge, Massachusetts (the "60 Binney Lease"). Under the terms of the 60 Binney Lease, starting on October 1, 2016, the Company will lease approximately 253,108 square feet of office and laboratory space at $72.50 per square foot per year, or $18.4 million per year in base rent, which is subject to scheduled annual rent increases of 1.75% plus certain operating expenses and taxes. The Company also executed a $9.2 million letter of credit upon signing the 60 Binney Lease, which was required to be collateralized with a bank account at a financial institution in accordance with the 60 Binney Lease agreement. The 60 Binney Lease will continue until the end of the 120th full calendar month following April 2017 or the earlier the date the Company occupies the Building or other conditions specified in the 60 Binney Lease occur. Pursuant to a work letter entered into in connection with the 60 Binney Lease, the landlord will contribute an aggregate of $42.4 million toward the cost of construction and tenant improvements for the Building. The purpose of the 60 Binney Lease is to supplement and eventually replace the Company's current leased premises at 150 Second Street and 215 First Street in Cambridge, Massachusetts and the Company intends to move its corporate headquarters to 60 Binney Street in mid-2017. The Company has the option to extend the 60 Binney Lease for two successive five-year terms.

Because the Company is involved in the construction project, including having responsibility to pay for a portion of the costs of finish work and mechanical, electrical, and plumbing elements of the Building, the Company is deemed for accounting purposes to be the owner of the Building during the construction period. Accordingly, the Company has recorded project construction costs incurred by the landlord as an asset in "Property and equipment, net" and a related financing obligation in "Construction financing lease obligation" on the Company's condensed consolidated balance sheet.

The Company bifurcates its future lease payments pursuant to the 60 Binney 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 being constructed, which is recorded as rental expense. Although the Company estimates that the Company will not begin making lease payments pursuant to the 60 Binney Lease until April 2017, 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 60 Binney Lease in September 2015. During the nine months ended September 30, 2015, the Company recognized $0.1 million of non-cash rental expense attributable to the land.

As of September 30, 2015, Property and equipment, net, includes $43.8 million related to construction costs for the Building. The construction financing lease obligation related to the Building was $43.8 million. No cash was paid to the landlord related to the Building for the three and nine months ended September 30, 2015.

Once the landlord completes the construction of the Building, the Company will evaluate the 60 Binney Lease in order to determine whether or not the 60 Binney Lease meets the criteria for "sale-leaseback" treatment. If the 60 Binney Lease meets the "sale-leaseback" criteria, the Company will remove the asset and the related liability from its consolidated balance sheet and treat the 60 Binney Lease as either an operating or a capital lease based on the Company's assessment of the accounting guidance. The Company expects that upon completion of construction of the Building the 60 Binney Lease will not meet the "sale-leaseback" criteria. If the 60 Binney Lease does not meet "sale-leaseback" criteria, the Company will treat the 60 Binney Lease as a financing obligation and will depreciate the asset in accordance with the Company's accounting policy.

As of September 30, 2015, future minimum commitments under the 60 Binney Lease were as follows (in thousands):

Years ended December 31,		
2015	$	—
2016	$	—
2017	$	13,061
2018	$	18,591
2019	$	18,917
2020 and thereafter	$	147,379
Total	$	197,948

The table above sets forth the future minimum rental payments that the Company is obligated to pay after taking occupancy of the 60 Binney Lease, including amounts reflected on the condensed consolidated balance sheet under the caption "Construction financing lease obligation". The Company expects to commence these rental payments upon completion of the Building, estimated to be April 2017.

8. Significant agreements

Celgene Corporation

Original Collaboration Agreement

On March 19, 2013, the Company entered into a Master Collaboration Agreement (the "Collaboration Agreement") with Celgene Corporation ("Celgene") to discover, develop and commercialize potentially disease-altering gene therapies in oncology. The collaboration is focused on applying gene therapy technology to genetically modify a patient's own T cells, known as chimeric antigen receptor, or CAR T cells, to target and destroy cancer cells. Additionally, on March 19, 2013, the Company entered into a Platform Technology Sublicense Agreement (the "Sublicense Agreement") with Celgene pursuant to which the Company obtained a sublicense to certain intellectual property from Celgene, originating under Celgene's license from Baylor College of Medicine, for use in the collaboration.

Under the terms of the Collaboration Agreement, the Company received a $75.0 million up-front, non-refundable cash payment. The Company was responsible for conducting discovery, research and development activities through completion of Phase I clinical studies, if any, during the initial term of the Collaboration Agreement, or three years. The collaboration is governed by a joint steering committee ("JSC") formed by an equal number of representatives from the Company and Celgene. The JSC, among other activities, reviews the collaboration program, reviews and evaluates product candidates and approves regulatory plans. In addition to the JSC,

the Collaboration Agreement provides that the Company and Celgene each appoint representatives to a patent committee, which is responsible for managing the intellectual property developed and used during the collaboration.

Amended Collaboration Agreement

On June 3, 2015, the Company and Celgene amended and restated the Collaboration Agreement (the "Amended Collaboration Agreement"). Under the Amended Collaboration Agreement, the parties will now focus the collaboration exclusively on anti- B-cell maturation antigen ("BCMA") product candidates for a new three-year term. In connection with the Amended Collaboration Agreement, the Company received an upfront, one-time, non-refundable, non-creditable payment of $25.0 million to fund research and development under the collaboration. The collaboration will continue to be governed by the JSC.

Under the terms of the Amended Collaboration Agreement, for up to two product candidates selected for development under the collaboration, the Company is responsible for conducting and funding all research and development activities performed up through completion of the initial Phase I clinical study, if any, of such product candidate.

On a product candidate-by-product candidate basis, up through a specified period following enrollment of the first patient in an initial Phase I clinical study for such product candidate (the "Option Period"), the Company has granted Celgene an option to obtain an exclusive worldwide license to develop and commercialize such product candidate pursuant to a written agreement, the form of which the Company has already agreed upon, provided that, if Celgene does not exercise its option with respect to the first product candidate under the Amended Collaboration Agreement prior to the expiration of the applicable Option Period then it will not be permitted to exercise its option with respect to any future product candidates under the Amended Collaboration Agreement. In the event that Celgene exercises its option with respect to any product candidate, the Company may elect to co-develop and co-promote the product candidate in the United States, provided that, if the Company does not exercise its option co-develop and co-promote the first product candidate in-licensed by Celgene under the Amended Collaboration Agreement, then the Company will not be permitted to exercise its option to co-develop and co-promote any future product candidates under the Amended Collaboration Agreement.

If Celgene elects to exercise its option to exclusively in-license a product candidate, it must pay the Company an option fee in the amount of $10.0 million for the first product candidate and $15.0 million for any additional product candidates, plus an additional fee in the amount of $10.0 million in the event the Company does not exercise its option to co-develop and co-promote that product candidate in the United States. In addition to the applicable option fee, for each product candidate that is in-licensed by Celgene, and for which the Company does not exercise its option to co-develop and co-promote in the United States, the Company will be eligible to receive up to $10.0 million in clinical milestone payments, up to $117.0 million in regulatory milestone payments and up to $78.0 million in commercial milestone payments. The Company will also be eligible to receive a percentage of net sales as a royalty in a range from the mid-single digits to low-teens. The royalties payable to the Company are subject to certain reductions, including for any royalty payments required to be made by Celgene to acquire patent rights, with an aggregate minimum floor. Celgene will assume certain development obligations and must report on its progress in achieving these milestones on a quarterly basis.

If the Company elects to co-develop and co-promote a product candidate licensed by Celgene, then the Company and Celgene would share equally in all costs incurred relating to the development, commercialization and manufacturing of the product candidate within the United States and share equally in the profits generated by such product candidate in the United States. Additionally, if the Company elects to co-develop and co-promote a product candidate, then the milestones and royalties would decrease compared to those described above. Under this scenario, the Company would receive, per product, up to $10.0 million in clinical milestone payments and, outside of the United States, up to $54.0 million in regulatory milestone payments and up to $36.0 million in commercial milestone payments. In addition, to the extent any of the product candidates licensed by Celgene and co-developed and co-promoted by the Company are commercialized, the Company would be entitled to receive tiered royalty payments ranging from the mid-single digits to low-teens based on a percentage of net sales from sales generated outside of the United States. The royalties payable to the Company are subject to certain reductions, including for any royalty payments required to be made by Celgene to acquire patent rights, with an aggregate minimum floor. The co-development and co-promotion agreement would be governed by a joint governance committee, or JGC, formed by representatives from the Company and Celgene. The JGC will, among other activities, supervise the overall performance of the development and commercialization of elected product candidates and licensed products for United States administration.

Celgene is solely responsible for the manufacture and supply of drug product for any optioned product candidate. Under the Amended Collaboration Agreement, subject to customary "back-up" supply rights granted to Celgene, the Company has the sole right to manufacture or have manufactured supplies of vectors and associated payloads manufactured for incorporation into the optioned

product candidate. Celgene would reimburse the Company for its costs to manufacture and supply such vectors and associated payloads, plus a mid-single digit mark-up.

If Celgene does not exercise its option with respect to any product candidate prior to expiration of the applicable option period, then the Company has the right to develop that product candidate outside the scope of the Amended Collaboration Agreement.

Either party may terminate the Amended Collaboration Agreement upon written notice to the other party in the event of the other party's uncured material breach. Celgene may terminate the Amended Collaboration Agreement for any reason upon prior written notice to the Company. If the agreement is terminated, rights to product candidates in development at the time of such termination will be allocated to the parties through a mechanism included in the agreement. In addition, if Celgene terminates the agreement for the Company's breach, any then-existing co-development and co-promotion agreement will be automatically terminated and replaced with a license agreement for such product candidate and any amounts payable by Celgene under any then-existing product license agreements will be reduced.

Under the Amended Collaboration Agreement, the so-called "call option" under the prior collaboration agreement, pursuant to which Celgene had the option to terminate the collaboration agreement and obtain fully paid-up licenses to product candidates in the event of a change of control transaction involving the Company, has been eliminated.

Under the Sublicense Agreement, the Company will continue to have access to certain intellectual property rights in-licensed to Celgene pursuant to its collaboration agreement with the Baylor College of Medicine, which was first established in connection with the initiation of the original Collaboration Agreement between the Company and Celgene.

Accounting Analysis

The Company's Amended Collaboration Agreement with Celgene contains the following deliverables: (i) research and development services, (ii) participation on the JSC, (iii) participation on the patent committee, (iv) a license to the first product candidate, (v) manufacture of vectors and associated payload for incorporation into the first optioned product candidate under the license, and (vi) participation on the JGC under the co-development and co-promotion agreement for the first optioned product candidate under the license.

The license to the first product candidate is considered a deliverable at the inception of the arrangement and therefore the associated option fee is included in allocable arrangement consideration. The Company believes there is minimal risk with regard to whether Celgene will exercise the option based on the successful completion of preclinical activities and proximity of enrollment of the first patient in an initial Phase I clinical study for this product candidate. Further, Celgene loses the right to option any other product candidates if it does not agree to license the first product candidate. The Company has determined that the obligation within the license to manufacture or have manufactured supplies of vectors and associated payloads for incorporation into the first optioned product candidate is a deliverable, consistent with the option to license the first product candidate.

However, the Company has determined that the options to license any additional product candidates are substantive options and therefore are not considered deliverables at execution of the Amended Collaboration Agreement. Celgene is not contractually obligated to exercise the options. Additionally, as a result of the uncertain outcome of the discovery, research and development activities, the Company is at risk with regard to whether Celgene will exercise the options to license additional product candidates. Moreover, the Company has determined that the options are not priced at a significant and incremental discount. Accordingly, the options to other product candidates are not considered deliverables at the inception of the arrangement and the associated option fees are not included in allocable arrangement consideration.

The Company concluded that each of the three delivered elements at the inception of the agreement (research and development services, participation on the JSC and participation on the patent committee) has standalone value from the other undelivered elements. Additionally, the Amended Collaboration Agreement does not include return rights related to the collaboration term. Accordingly, each deliverable qualifies as a separate unit of accounting.

The Company determined that each of the identified deliverables have the same period of performance (the three year term through projected initial Phase I study completion) and have the same pattern of revenue recognition, ratably over the period of performance as there is no other discernible pattern of recognition. The Company identified the allocable arrangement consideration as the $25.0 million up-front research and development funding payment, $10.0 million option fee for the first product candidate, $20.0

million related to remaining deferred revenue from the original Collaboration Agreement, and $54.1 million of contingent revenue related to the estimated amounts that will be received from Celgene for manufacturing services. The $109.0 million total allocable arrangement consideration was allocated based on the relative estimated selling price of the separate units of accounting at the inception of the amended agreement, resulting in $17.3 million allocated to the three delivered elements at the inception of the agreement, which will be recognized over an initial three year term. This initial term will be revisited as the development plan timing changes or as a result of other events that impact the period over which the Company's obligations relate.

The Company evaluated all of the milestones that may be received in connection with Celgene's option to license a product candidate resulting from the collaboration. In evaluating if a milestone is substantive, the Company assesses whether: (i) the consideration is commensurate with either the Company's performance to achieve the milestone or the enhancement of the value of the delivered item(s) as a result of a specific outcome resulting from the Company's performance to achieve the milestone, (ii) the consideration relates solely to past performance and (iii) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. All clinical and regulatory milestones that may be received under the option to the license agreement are considered substantive on the basis of the contingent nature of the milestone, specifically reviewing factors such as the scientific, clinical, regulatory, commercial and other risks that must be overcome to achieve the milestone as well as the level of effort and investment required. Accordingly, such amounts will be recognized as revenue in full in the period in which the associated milestone is achieved, assuming all other revenue recognition criteria are met. All commercial milestones will be accounted for in the same manner as royalties and recorded as revenue upon achievement of the milestone, assuming all other revenue recognition criteria are met.

During the nine months ended September 30, 2015 and 2014 the Company recognized $12.6 million and $18.7 million, respectively, of revenue associated with its collaboration with Celgene related to the recognition of discovery, research and development services. As of September 30, 2015 and December 31, 2014, there was $43.3 million and $30.7 million, respectively, of total deferred revenue related to the Company's collaboration with Celgene, which is classified as current or non-current in the condensed consolidated balance sheets, $15.6 million of which is currently expected to be recognized through the first half of 2018 with the remaining amount deferred until a later date.

9. Stock-based compensation and warrants

In January 2015, the number of shares of common stock available for issuance under the 2013 Stock Option and Incentive Plan ("2013 Plan") was increased by approximately 1.3 million shares as a result of the automatic increase provision of the 2013 Plan. As of September 30, 2015, the total number of shares of common stock available for issuance under the 2013 Plan was approximately 0.6 million.

Stock-based compensation expense

Stock-based compensation expense by award type was as follows (in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2015	2014	2015	2014
Stock options	$ 8,407	$ 2,303	$ 28,472	$ 7,115
Restricted stock awards	—	16	—	47
Restricted stock units	1,056	567	2,341	567
Employee stock purchase plan	66	28	198	28
	$ 9,529	$ 2,914	$ 31,011	$ 7,757

As of September 30, 2015, the Company had $97.1 million of unrecognized stock-based compensation expense, net of estimated forfeitures, related to unvested stock options, restricted stock units, and the employee stock purchase plan that is expected to be recognized over a weighted-average period of 3.0 years.

On January 29, 2015, the Company entered into a Transitional Services and Separation Agreement with its Chief Scientific Officer, ending his employment with the Company effective July 6, 2015. Subsequent to this separation date, he is serving as a member of the Company's Scientific Advisory Board. Under the terms of the agreement, outstanding options held by the Chief

Scientific Officer were modified. The incremental value of the modification was estimated to be $3.0 million using a Black-Scholes option valuation model, which is being recognized within research and development expense on a straight-line basis through the date of separation. As a result of the modification, the Company recognized $0.2 million and $3.0 million of stock-based compensation expense during the three and nine months ended September 30, 2015, respectively.

On April 10, 2015, the Company modified the vesting conditions of a stock option award held by a non-employee founder, which resulted in $6.7 million of stock-based compensation expense recognized to research and development expense during the second quarter of 2015.

Stock options

The following table summarizes the stock option activity under the Company's equity award plans (shares in thousands):

	Shares	Weighted-average exercise price per share
Outstanding at December 31, 2014	3,652	$ 12.30
Granted	1,188	$ 115.69
Exercised	(1,124)	$ 7.58
Canceled or forfeited	(55)	$ 43.05
Outstanding at September 30, 2015	3,661	$ 46.83
Exercisable at September 30, 2015	1,090	$ 9.47
Vested and expected to vest at September 30, 2015	3,552	$ 37.87

Options exercisable for approximately 1.1 million shares of common stock were exercised during the nine months ended September 30, 2015, resulting in total proceeds to the Company of $8.5 million. In accordance with the Company's equity award plans, the shares were issued from a pool of shares reserved for issuance under the equity award plans.

Restricted stock units

The following table summarizes the restricted stock unit activity under the Company's equity award plans (shares in thousands):

	Shares	Weighted-average grant date fair value
Unvested balance at December 31, 2014	179	$ 30.47
Granted	37	$ 165.62
Vested	(62)	$ 30.47
Forfeited	(5)	$ 30.47
Unvested balance at September 30, 2015	149	$ 64.11

Employee stock purchase plan

The Company's 2013 Employee Stock Purchase Plan ("2013 ESPP") authorizes the initial issuance of up to a total of 238,000 shares of the Company's common stock to participating employees. The first offering period under the 2013 ESPP closed on January 31, 2015, resulting in the purchase of 6,780 shares of common stock. The second offering period under the 2013 ESPP closed on July 31, 2015, resulting in the purchase of 3,765 shares of common stock.

Warrants

As of September 30, 2015 and December 31, 2014, the Company had no and 0.2 million warrants outstanding to purchase common stock. During the three and nine months ended September 30, 2015, there were 0.2 million warrants exercised and no cancellations or expirations.

10. Income taxes

Deferred tax assets and deferred tax liabilities are recognized based on temporary differences between the financial reporting and tax basis of assets and liabilities using statutory rates. A valuation allowance is recorded against deferred tax assets if it is more likely than not that some or all of the deferred tax assets will not be realized. Due to the uncertainty surrounding the realization of the favorable tax attributes in future tax returns, the Company has recorded a full valuation allowance against the Company's otherwise recognizable net deferred tax assets. The Company has allocated its valuation allowance in accordance with the provisions of ASC 740, *Income Taxes*, which resulted in a current deferred tax asset of $0.7 million and a non-current deferred tax liability of $0.7 million as of September 30, 2015.

11. Net loss per share

The following common stock equivalents were excluded from the calculation of diluted net loss per share for the periods indicated because including them would have had an anti-dilutive effect (in thousands):

	September 30,	
	2015	2014
Warrants	—	338
Outstanding stock options	3,661	4,042
Unvested restricted stock	—	7
Restricted stock units	149	184
ESPP shares	3	2
Acquisition holdback	94	94
	3,907	4,667

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

The following information should be read in conjunction with the unaudited financial information and the notes thereto included in this Quarterly Report on Form 10-Q and the audited financial information and the notes thereto included in our Annual Report on Form 10-K, which was filed with the Securities and Exchange Commission, or the SEC, on February 25, 2015.

Except for the historical information contained herein, the matters discussed in this Quarterly Report on Form 10-Q may be deemed to be forward-looking statements that involve risks and uncertainties. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. In this Quarterly Report on Form 10-Q, words such as "may," "will," "expect," "anticipate," "estimate," "intend," "plan," and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) are intended to identify forward-looking statements.

Our actual results and the timing of certain events may differ materially from the results discussed, projected, anticipated, or indicated in any forward-looking statements. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this Quarterly Report. In addition, even if our results of operations, financial condition and liquidity, and the development of the industry in which we operate are consistent with the forward-looking statements contained in this Quarterly Report, they may not be predictive of results or developments in future periods.

The following information and any forward-looking statements should be considered in light of factors discussed elsewhere in this Quarterly Report on Form 10-Q, including those risks identified under Part II, Item 1A. Risk Factors.

We caution readers not to place undue reliance on any forward-looking statements made by us, which speak only as of the date they are made. We disclaim any obligation, except as specifically required by law and the rules of the SEC, to publicly update or revise any such statements to reflect any change in our expectations or in events, conditions or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those set forth in the forward-looking statements.

Overview

We are a clinical-stage biotechnology company committed to developing potentially transformative gene therapies for severe genetic and rare diseases and in the field of T cell-based immunotherapy. With our lentiviral-based gene therapy and gene editing capabilities, we have built an integrated product platform with broad potential application in these areas. We believe that gene therapy for severe genetic diseases has the potential to change the way these patients are treated by correcting the underlying genetic defect that is the cause of their disease, rather than offering treatments that only address their symptoms. We and our scientific collaborators have generated what we believe is human proof-of-concept data for our gene therapy platform in three underserved diseases.

We are conducting a Phase II/III clinical study, called the Starbeam Study, of our most advanced product candidate, Lenti-D, to evaluate its safety and efficacy in subjects with childhood cerebral adrenoleukodystrophy, or CCALD, a rare, hereditary neurological disorder affecting young boys that is often fatal. In October 2013, we announced that the first subject had been treated in this study and in May 2015 we announced the achievement of enrollment of 18 subjects in this study. We are also conducting an observational study of subjects with CCALD treated by allogeneic hematopoietic stem-cell transplant referred to as the ALD-103 study. Lenti-D has been granted Orphan Drug status by the U.S. Food and Drug Administration, or FDA, and the European Medicines Agency, or EMA, for the treatment of adrenoleukodystrophy.

We are also conducting two Phase I/II clinical studies in the United States, Australia, and Thailand and in France, called the Northstar (HGB-204) and HGB-205 studies, respectively, of our product candidate, LentiGlobin, to evaluate its safety and efficacy in subjects with beta-thalassemia major and sickle cell disease, or SCD, which are rare, hereditary blood disorders that often lead to severe anemia and shortened lifespans. We have initiated a Phase I clinical study in the United States, called the HGB-206 Study, to evaluate the safety and efficacy of LentiGlobin in subjects with severe SCD. In June 2015, we announced that the first patient with severe SCD had been infused in the HGB-206 Study and we are planning to increase the number of subjects to be enrolled in the HGB-206 study from eight to twenty subjects. LentiGlobin has been granted Orphan Drug status by the FDA and EMA for both beta-thalassemia and severe SCD. LentiGlobin was granted Fast-Track designation by the FDA for the treatment of beta-thalassemia major in January 2013 and for the treatment of certain patients with severe SCD in May 2014. In January 2015, the FDA granted Breakthrough Therapy designation to LentiGlobin for the treatment of transfusion dependent patients with beta-thalassemia.

We have announced clinical data from our ongoing clinical studies of LentiGlobin in subjects with beta-thalassemia major and SCD. These data are summarized below.

- In December 2014, at the annual meeting of the American Society of Hematology (ASH), we announced data from the first eight subjects treated with LentiGlobin in these studies. As of December 2014, in the first four subjects, each of whom had at least three months of follow-up, treatment with LentiGlobin resulted in sufficient hemoglobin production to reduce or eliminate the need for transfusion support among patients with beta-thalassemia major who would otherwise require chronic blood transfusions. These data included the first five subjects treated in the Northstar study and the first three subjects (two with beta-thalassemia major and one with severe SCD) from the HGB-205 study.
- In June 2015, at the 20th Congress of the European Hematology Association, we announced long-term follow up of two subjects with beta-thalassemia major and early safety and efficacy data in the first subject with severe SCD treated with LentiGlobin in the HGB-205 study. As of May 2015, the two patients with beta-thalassemia major remained transfusion-independent for 16 and 14 months, respectively, and neither experienced a LentiGlobin-related adverse event. As of May 2015, the proportion of anti-sickling hemoglobin being produced by the first-ever subject with severe SCD treated with gene therapy has risen steadily and accounted for 45% of all hemoglobin production at the patient's six-month visit post-drug product infusion; this is above the 30% threshold expected to potentially achieve a disease-modifying clinical effect. Further, as of May 2015, the patient with severe SCD had been free of transfusions for more than three months without complications or hospitalizations for SCD-related events post-transplant, and has demonstrated improvement in hemolysis markers.

In November 2015, we announced that three abstracts related to our ongoing clinical studies of LentiGlobin have been accepted for presentation at the ASH annual meeting to be held in December 2015. As of the July 31, 2015 data cutoff for these abstracts:

- With respect to the Northstar study, for the seven subjects that have been monitored for at least 6 months post-infusion, three of the β0/β0 genotype and four of the non- β0/β0 genotype, the median level of HbAT87Q expression among these seven subjects was 5.2 g/dL, a range of 1.9 to 8.2 g/dL, with total hemoglobin ranging from 8.5 to 11.1 g/dL at last visit. All four non-β0/β0 subjects had been transfusion-free for at least 90 days, with a median of 287 days transfusion-free (range: 171 to 396 days). Two of the β0/β0 subjects received a single transfusion post-discharge, and one remained transfusion-dependent.
- With respect to the HGB-205 study, the patient with severe SCD was producing approximately 51.5% anti-sickling hemoglobin (48 percent HbA^{T87Q}, 1.8 percent HbF, 1.7 percent HbA2) at nine months post-infusion and remained free of transfusions. The patient with severe SCD had not had a post-treatment hospitalization for a disease-related event despite ceasing chronic transfusions on Day 88. Both patients in the study with beta-thalassemia major have remained transfusion-free for at least 15 months post-infusion, with consistent expression of HbA^{T87Q} – both subjects are the β0/ βE genotype.
- With respect to the HGB-206 study, LentiGlobin drug product had been manufactured for two patients with severe SCD and one subject had been infused.

We currently plan to initiate two new clinical trials of LentiGlobin, called HGB-207, for adult and adolescent patients with beta-thalassemia major, and HGB-208, for pediatric patients with beta-thalassemia major. Each of these trials, once initiated, are currently expected to enroll approximately 15 patients to be evaluated for 24 months following treatment, and we expect that the primary endpoint of these trials will be 12 months of transfusion independence following treatment.

In May 2015, we announced that we believe we have reached general agreement with regulatory authorities in Europe and the United States regarding our development plans for LentiGlobin, which could potentially result in accelerated approvals in these jurisdictions. These discussions are summarized below.

- In Europe, we are participating in the Adaptive Pathways (formerly referred to as Adaptive Licensing) pilot program of the European Medicines Agency, or EMA. Based on our discussions with EMA, we believe it is possible to seek conditional approval of LentiGlobin for the treatment of adults and adolescents with beta-thalassemia major on the basis of the totality of clinical data, in particular reduction in transfusion need, from the ongoing Northstar study and supportive HGB-205 study. We believe that conversion to full approval will be subject to the successful completion of the HGB-207 and HGB-208 clinical trials, and collection of supportive long-term follow-up data and "real-life" post-approval data.
- In the United States, we believe we have reached general agreement with the U.S. Food and Drug Administration, or FDA, on the major elements of our planned HGB-207 and HGB-208 clinical trials. Based on our discussions with the FDA, we believe that the data from these trials, together with data from our ongoing beta-thalassemia major clinical studies (Northstar and HGB-205), could form the basis for a Biologics License Application, or BLA, submission for LentiGlobin for the treatment of beta-thalassemia major.

In March 2013, we entered into a global strategic collaboration with Celgene Corporation, or Celgene, to discover, develop and commercialize chimeric antigen receptor-modified T cells, or CAR T cells, as potentially disease-altering therapies in oncology. This collaboration had an initial term of three years, and Celgene made a $75.0 million up-front, non-refundable cash payment to us as consideration for entering into the collaboration. In June 2015, we amended and restated the collaboration agreement, or the Amended Collaboration Agreement, to focus exclusively on anti-BCMA product candidates for a new three-year term. B-cell maturation antigen, or BCMA, is a cell surface protein that is expressed in normal plasma cells and in most multiple myeloma cells, but is absent from other normal tissues. As consideration for the Amended Collaboration Agreement, we received an upfront, non-refundable cash payment of $25.0 million to fund research and development under the collaboration. During the three and nine months ended September 30, 2015, we recognized $1.3 million and $12.6 million, respectively, of revenue associated with our collaboration with Celgene related to the research and development services performed. As of September 30, 2015, we have classified $43.3 million of deferred revenue related to our collaboration with Celgene in the accompanying balance sheets. We expect the first anti-BCMA product candidate from this collaboration, bb2121, to enter clinical trials in early 2016.

In June 2014, we acquired Precision Genome Engineering, Inc., or Pregenen, a privately-held biotechnology company headquartered in Seattle, Washington. Through the acquisition, we obtained rights to Pregenen's gene editing and cell signaling technology. The agreement provided for up to $135.0 million in future contingent cash payments by us upon the achievement of certain preclinical, clinical and commercial milestones related to the Pregenen technology, of which $15.0 million relates to preclinical milestones, $20.1 million relates to clinical milestones and $99.9 million relates to commercial milestones. During the second quarter of 2015, a $1.0 million milestone was achieved, which resulted in a $1.0 million payment to the former equityholders of Pregenen during the third quarter of 2015. We estimate future contingent cash payments have a fair value of $8.3 million as of September 30, 2015, $3.5 million of which is classified as a current liability.

As of September 30, 2015, we had cash, cash equivalents and marketable securities of approximately $901.7 million. We expect that our existing cash, cash equivalents and marketable securities will be sufficient to fund our current operations through 2018.

Since our inception in 1992, we have devoted substantially all of our resources to our development efforts relating to our product candidates, including activities to manufacture product in compliance with good manufacturing practices, or GMP, to conduct clinical studies of our product candidates, to provide general and administrative support for these operations and to protect our intellectual property. We do not have any products approved for sale and have not generated any revenue from product sales. We have funded our operations primarily through the sale of common stock in our public offerings, private placements of preferred stock and warrants and through collaborations.

We have never been profitable and have incurred net losses in each year since inception. Our net losses were $119.5 million for the nine months ended September 30, 2015 and our accumulated deficit was $266.9 million as of September 30, 2015. Substantially all our net losses resulted from costs incurred in connection with our research and development programs and from general and administrative costs associated with our operations. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We expect our expenses will increase substantially in connection with our ongoing and planned activities, as we:

- conduct clinical studies for our Lenti-D and LentiGlobin product candidates;
- increase research and development-related activities for the discovery and development of oncology product candidates, including bb2121;
- continue our research and development efforts;
- manufacture clinical study materials and develop large-scale manufacturing capabilities;
- seek regulatory approval for our product candidates; and
- add personnel to support our product development and commercialization efforts.

We do not expect to generate revenue from product sales unless and until we successfully complete development and obtain regulatory approval for one or more of our product candidates, which we expect will take a number of years and is subject to significant uncertainty. We have no commercial-scale manufacturing facilities, and all of our manufacturing activities are contracted out to third parties. Additionally, we currently utilize third-party contract research organizations, or CROs, to carry out our clinical development activities; and we do not yet have a sales and marketing organization. If we seek to obtain regulatory approval for any of our product candidates, we expect to incur significant commercialization expenses as we prepare for product sales, marketing, manufacturing, and distribution. Accordingly, we will seek to fund our operations through public or private equity or debt financings, strategic collaborations, or other sources. However, we may be unable to raise additional funds or enter into such other arrangements

when needed on favorable terms or at all. Our failure to raise capital or enter into such other arrangements as and when needed would have a negative impact on our financial condition and our ability to develop our products.

Because of the numerous risks and uncertainties associated with product development, we are unable to predict the timing or amount of increased expenses or when or if we will be able to achieve or maintain profitability. Even if we are able to generate revenues from the sale of our products, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce our operations.

Financial operations overview

Revenue

To date, we have not generated any revenues from the sale of products. Our revenues have been derived from collaboration arrangements, research fees, license fees and grant revenues.

Collaboration revenue is generated exclusively from our collaboration arrangement with Celgene. The terms of this arrangement contain multiple deliverables, which include: (i) research and development services, (ii) participation on the joint steering committee (iii) participation on the patent committee, (iv) a license to the first product candidate, (v) manufacture of vectors and associated payload for incorporation into the first optioned product candidate under the license, and (vi) participation on the joint governance committee under the co-development and co-promotion agreement for the first optioned product candidate under the license. We recognize arrangement consideration allocated to each unit of accounting when all of the revenue recognition criteria in Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 605, *Revenue Recognition*, or ASC 605, are satisfied for that particular unit of accounting. We expect that $17.3 million of revenue from the Celgene arrangement associated with research and development services, joint steering committee services and patent committee services will be recognized ratably over the associated period of performance, which was initially estimated to be three years from the date of the agreement in June 2015.

Research and license fee revenue is primarily generated through license and research and development agreements with strategic partners and nonprofit organizations for the development and commercialization of our product candidates. There are no performance, cancellation, termination, or refund provisions in any of our arrangements that contain material financial consequences to us.

Nonrefundable license fees are recognized as revenue upon delivery provided there are no undelivered elements in the arrangement. Research fees are recognized as revenue over the period we perform the associated services or on a straight-line basis if the pattern of performance cannot be estimated.

Research and development expenses

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

- employee-related expenses, including salaries, benefits, travel and stock-based compensation expense;
- expenses incurred under agreements with CROs and clinical sites that conduct our clinical studies;
- costs of acquiring, developing, and manufacturing clinical study materials;
- facilities, depreciation, and other expenses, which include direct and allocated expenses for rent and maintenance of facilities, insurance, and other supplies;
- costs associated with our research platform and preclinical activities;
- costs associated with in-licensing other product candidates or technologies for use in preclinical and clinical activities;
- costs associated with our regulatory, quality assurance and quality control operations; and
- amortization of intangible assets.

Research and development costs are expensed as incurred. Costs for certain development activities are recognized based on an evaluation of the progress to completion of specific tasks using information and data provided to us by our vendors and our clinical sites. We cannot determine with certainty the duration and completion costs of the current or future clinical studies of our product candidates or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our product candidates that obtain regulatory approval. We may never succeed in achieving regulatory approval for any of our product candidates.

The duration, costs, and timing of clinical studies and development of our product candidates will depend on a variety of factors, including:

- the scope, rate of progress, and expense of our ongoing as well as any additional clinical studies and other research and development activities we undertake;
- future clinical study results;
- uncertainties in clinical study enrollment rates;
- changing standards for regulatory approval; and
- the timing and receipt of any regulatory approvals.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the FDA, or another regulatory authority were to require us to conduct clinical studies beyond those that we currently anticipate will be required for the completion of clinical development of a product candidate or if we experience significant delays in enrollment in any of our clinical studies, we could be required to expend significant additional financial resources and time on the completion of clinical development for our product candidates.

We plan to increase our research and development expenses for the foreseeable future as we continue to advance the clinical development of our Lenti-D and LentiGlobin product candidates, conduct research and development activities in the field of oncology and continue the research and development of product candidates using our gene editing technology platform. Our research and development activities include the following:

- We are conducting a Phase II/III clinical study to examine the safety and efficacy of our Lenti-D product candidate in the treatment of CCALD. In October 2013, we announced that the first subject had been treated in this study and in May 2015 we announced the achievement of enrollment of 18 subjects in this study. We are also conducting an observational study of subjects with CCALD treated by allogeneic hematopoietic stem-cell transplant.
- We are conducting a Phase I/II clinical study in the United States, Australia and Thailand to study the safety and efficacy of our LentiGlobin product candidate in the treatment of subjects with beta-thalassemia major. In March 2014, we announced that the first subject had been treated in this study. We recently amended the protocol for this study to expand enrollment to include up to three adolescent patients.
- We are conducting a Phase I/II clinical study in France to study the safety and efficacy of our LentiGlobin product candidate in the treatment of subjects with beta-thalassemia major and severe SCD. In December 2013, we announced that the first subject beta-thalassemia major had been treated in this study and in October 2014, we announced that the first subject with SCD had been treated in this study.
- We have initiated a Phase I clinical study in the United States to study the safety and efficacy of our LentiGlobin product candidate in the treatment of subjects with severe SCD. In June 2015, we announced that the first patient with severe SCD had been infused in the HGB-206 Study and we are planning to increase the number of subjects to be enrolled in the HGB-206 study from eight to twenty subjects.
- We are conducting research and development activities in the field of oncology and expect the first product candidate from our collaboration with Celgene, bb2121 to treat multiple myeloma, to enter clinical trials in early 2016.
- We are planning to initiate two new clinical trials of LentiGlobin, called HGB-207, for adult and adolescent patients with beta-thalassemia major, and HGB-208, for pediatric patients with beta-thalassemia major.
- We will continue to manufacture clinical study materials in support of our clinical studies.

Our direct research and development expenses consist principally of external costs, such as fees paid to investigators, consultants, central laboratories and CROs in connection with our clinical studies, costs to in-license product candidates and new technologies, and costs related to acquiring and manufacturing clinical study materials. We allocate salary and benefit costs directly related to specific programs. We do not allocate personnel-related discretionary bonus or stock-based compensation costs, costs associated with our general discovery platform improvements, depreciation or other indirect costs that are deployed across multiple projects under development and, as such, the costs are separately classified as personnel and other expenses in the table below:

	Three months ended September 30,		Nine months ended September 30,	
	2015	2014	2015	2014
	(in thousands)		(in thousands)	
Lenti-D	$ 2,837	$ 2,762	$ 10,729	$ 7,804
LentiGlobin	10,937	5,789	25,070	15,927
Pre-clinical programs	3,680	1,467	11,596	3,723
Total direct research and development expense	17,454	10,018	47,395	27,454
Employee- and contractor-related expenses	3,568	2,097	9,029	4,329
Stock-based compensation expense	4,426	1,477	19,726	3,602
Platform-related expenses	2,985	522	17,047	1,038
Facility expenses	1,724	1,206	4,710	3,735
Other expenses	238	1,329	473	1,885
Unallocated personnel and other expenses	12,941	6,631	50,985	14,589
Total research and development expense	**$ 30,395**	**$ 16,649**	**$ 98,380**	**$ 42,043**

General and administrative expenses

General and administrative expenses consist primarily of salaries and related costs for personnel, including stock-based compensation and travel expenses for our employees in executive, operational, finance, legal, business development, commercial and human resource functions. Other general and administrative expenses include facility-related costs, professional fees for accounting and legal services, directors' fees and expenses associated with obtaining and maintaining patents.

We anticipate that our general and administrative expenses will increase in the future as we increase our headcount to support our continued research and development and potential commercialization of our product candidates. Additionally, if and when we believe a regulatory approval of the first product candidate appears likely, we anticipate an increase in payroll and related expenses as a result of our preparation for commercial operations, especially as it relates to the sales and marketing of our product candidates.

Other income, net

Other income, net consists primarily of interest income earned on investments, foreign currency gain or loss and tax incentives from the Massachusetts Life Sciences Center.

Critical accounting policies and estimates

Our management's discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with generally accepted accounting principles. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, and expenses and the disclosure of contingent assets and liabilities in our financial statements. On an ongoing basis, we evaluate our estimates and judgments, including those related to accrued research and development expenses, revenue, construction financing lease obligations, stock-based compensation, income taxes, contingent consideration and fair value estimates used to assess potential impairment of long-lived assets. We base our estimates on historical experience, known trends and events and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. In making estimates and judgments, management employs critical accounting policies. Beginning in the third quarter of 2015, we record certain estimated construction costs incurred and reported to us by a landlord as an asset and corresponding construction financing lease obligation on our condensed consolidated balance sheets. During the nine months ended September 30, 2015, there were no other material changes to our critical accounting policies as reported in our Annual Report on Form 10-K for the year ended December 31, 2014, which was filed with the SEC on February 25, 2015.

Results of Operations

Comparison of the three months ended September 30, 2015 and 2014:

	Three months ended September 30,		
	2015	2014	Change
	(in thousands)		
Revenue:			
Collaboration revenue	$ 1,324	$ 6,250	$ (4,926)
Research and license fees	—	115	(115)
Total revenue	1,324	6,365	(5,041)
Operating expenses:			
Research and development	30,395	16,649	13,746
General and administrative	13,704	6,648	7,056
Change in fair value of contingent consideration	352	78	274
Total operating expenses	44,451	23,375	21,076
Loss from operations	(43,127)	(17,010)	26,117
Other income (expense), net	263	(20)	(283)
Loss before income taxes	(42,864)	(17,030)	25,834
Income tax expense	(60)	—	60
Net loss	$ (42,924)	$ (17,030)	$ 25,894

Revenue. Total revenue was $1.3 million for the three months ended September 30, 2015 compared to $6.4 million for the three months ended September 30, 2014. The decrease of $5.1 million was primarily attributable to a reduction in collaboration revenue as a result of the amendment to our collaboration agreement with Celgene in the second quarter of 2015.

Research and development expenses. Research and development expenses were $30.4 million for the three months ended September 30, 2015, compared to $16.6 million for the three months ended September 30, 2014. The increase of $13.7 million was primarily attributable to the following:

- $6.6 million of increased employee compensation and benefit expense, $2.9 million of which related to stock-based compensation expense and $1.9 million of which related to increased payroll expense.
- $1.4 million of increased manufacturing related costs, $1.2 million of increased lab expenses, and $1.0 million of increased clinical trial related costs necessary to support the advancement of our clinical and pre-clinical programs.

General and administrative expenses. General and administrative expenses were $13.7 million for the three months ended September 30, 2015, compared to $6.6 million for the three months ended September 30, 2014. The increase of $7.1 million was primarily attributable to $5.7 million of increased employee compensation and benefit expense to support our overall growth, of which $3.7 million was stock-based compensation expense.

Change in fair value of contingent consideration. The change in fair value of contingent consideration of $0.3 million was primarily related to an increase in the probability of successful achievement of milestones expected to be achieved within the next twelve months.

Comparison of the nine months ended September 30, 2015 and 2014

	Nine months ended September 30,		
	2015	2014	Change
	(in thousands)		
Revenue:			
Collaboration revenue	$ 12,607	$ 18,750	$ (6,143)
Research and license fees	—	285	(285)
Total revenue	12,607	19,035	(6,428)
Operating expenses:			
Research and development	98,380	42,043	56,337
General and administrative	31,765	17,924	13,841
Change in fair value of contingent consideration	2,540	78	2,462
Total operating expenses	132,685	60,045	72,640
Loss from operations	(120,078)	(41,010)	79,068
Other income, net	630	48	(582)
Loss before income taxes	(119,448)	(40,962)	78,486
Income tax (expense) benefit	(60)	11,797	11,857
Net loss	$ (119,508)	$ (29,165)	$ 90,343

Revenue. Total revenue was $12.6 million for the nine months ended September 30, 2015 compared to $19.0 million for the nine months ended September 30, 2014. The decrease of $6.4 million was primarily attributable to a reduction in collaboration revenue as a result of the amendment to our collaboration agreement with Celgene in the second quarter of 2015.

Research and development expenses. Research and development expenses were $98.4 million for the nine months ended September 30, 2015 compared to $42.0 million for the nine months ended September 30, 2014. The increase of $56.3 million was primarily attributable to the following:

- $16.1 million of increased stock-based compensation expense, $6.7 million of which related to the modification of a stock option award held by a non-employee founder and $3.0 million of which related to the modification of a stock option award held by our former Chief Scientific Officer, each of which were one-time charges.
- $10.6 million of non-recurring in-license milestones and fees, of which $5.4 million related to an upfront payment for amending and restating an existing patent sublicense agreement; $3.3 million (€3.0 million) related to an upfront payment for amending an existing license agreement with Institut Pasteur; and $1.5 million related to an upfront payment for a new license and collaboration agreement with Five Prime Therapeutics, Inc.
- $9.0 million of increased other employee compensation and benefit expense, $4.4 million of increased manufacturing related costs, $4.0 million of increased clinical trial related costs, and $3.4 million of increased lab expenses necessary to support the advancement of our clinical and pre-clinical programs.

General and administrative expenses. General and administrative expenses were $31.8 million for the nine months ended September 30, 2015 compared to $17.9 million for the nine months ended September 30, 2014. The increase of $13.9 million was primarily attributable to $10.4 million of increased employee and contractor related costs to support our overall growth, of which $7.1 million was stock-based compensation expense, and $1.0 million of increased consulting costs.

Change in fair value of contingent consideration. The change in fair value of contingent consideration of $2.5 million was primarily related to an increase in the probability of successful achievement of milestones expected to be achieved within the next twelve months.

Income tax (expense) benefit. The change income tax (expense) benefit was primarily attributable to a non-recurring tax benefit recognized in 2014 as a result of the acquisition of Pregenen in the second quarter of 2014.

Liquidity and Capital Resources

As of September 30, 2015, we had cash, cash equivalents and marketable securities of approximately $901.7 million. We expect that our existing cash, cash equivalents and marketable securities will be sufficient to fund our current operations through 2018. Cash

in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. As of September 30, 2015, our funds are held in U.S. Treasuries, U.S. government agency securities, federally insured certificates of deposit and money market funds.

We have incurred losses and cumulative negative cash flows from operations since our inception in April 1992, and as of September 30, 2015 we had an accumulated deficit of $266.9 million. We anticipate that we will continue to incur losses for at least the next several years. We expect that our research and development and general and administrative expenses will continue to increase and, as a result, we will need additional capital to fund our operations, which we may raise through public or private equity or debt financings, strategic collaborations, or other sources.

We have funded our operations principally from the sale of common stock, preferred stock and through the Celgene collaboration. On June 24, 2013, we completed our initial public offering, or IPO, whereby we sold 6,832,352 shares of common stock at a price of $17.00 per share for aggregate net proceeds received by us of $104.9 million. On July 14, 2014, we sold 3,450,000 shares of common stock (inclusive of 450,000 shares of common stock sold by us pursuant to the full exercise of an overallotment option granted to the underwriters in connection with the offering) through an underwritten public offering at a price of $34.00 per share for aggregate net proceeds to us of $109.8 million. On December 19, 2014, we sold 3,047,500 shares of common stock (inclusive of 397,500 shares of common stock sold by us pursuant to the full exercise of an overallotment option granted to the underwriters in connection with the offering) through an underwritten public offering at a price of $85.00 per share for aggregate net proceeds to us of $243.3 million. On June 29, 2015, we sold 2,941,176 shares of common stock through an underwritten public offering at a price of $170.00 per share for aggregate net proceeds to us of $477.2 million.

Sources of Liquidity

Cash Flows

The following table sets forth the primary sources and uses of cash for each of the periods below:

	Nine months ended September 30,	
	2015	2014
	(in thousands)	
Net cash provided by (used in):		
Operating activities	$ (65,344)	$ (44,029)
Investing activities	(350,694)	(184,788)
Financing activities	485,703	112,141
Net increase (decrease) in cash and cash equivalents	$ 69,665	$ (116,676)

Cash Flows from Operating Activities. The $21.3 million increase in cash used in operating activities for the nine months ended September 30, 2015, compared to the nine months ended September 30, 2014, was primarily due to the increase in net loss during this period which was primarily attributable to increased stock-based compensation expense, in-license milestones and fees, and spending on our clinical and pre-clinical stage programs, partially offset by cash received in connection with the Amended Collaboration Agreement with Celgene. Net loss was $119.5 million for the nine months ended September 30, 2015 compared to $29.2 million for the nine months ended September 30, 2014, an increase of $90.3 million.

Cash Flows from Investing Activities. The net cash used in investing activities was $350.7 million for the nine months ended September 30, 2015 and was primarily due to our purchase of $470.5 million of marketable securities partially offset by proceeds from maturities of marketable securities of $132.2 million.

Cash Flows from Financing Activities: The net cash provided by financing activities was $485.7 million for the nine months ended September 30, 2015 and was due to $477.2 million net proceeds from an offering of our common stock and $8.9 million of proceeds from the exercise of stock options and ESPP contributions, offset by payment of contingent purchase price consideration of $0.4 million.

Contractual Obligations and Commitments

The following table summarizes our contractual obligations and commitments at September 30, 2015:

	Total	2015	2016 through 2017	2018 through 2019	After 2019
			(in thousands)		
150 Second Street Lease	$ 25,777	$ 791	$ 6,619	$ 7,023	$ 11,344
60 Binney Street Lease	197,948	—	13,061	37,508	147,379
Other operating leases (1)	1,552	235	1,317	—	—
License costs (2)	4,408	121	1,670	1,745	872
Sponsored research agreements	2,809	357	2,020	432	—
Total	$ 232,494	$ 1,504	$ 24,687	$ 46,708	$ 159,595

(1) Includes costs of our 215 First Street, Cambridge, Massachusetts office lease and the lease for our lab and office space in Seattle, Washington.

(2) License costs include annual license maintenance fee payments. We have not included annual license maintenance fees or minimum royalty payments after December 31, 2019, as we cannot determine if they will occur.

We also have obligations to make future payments to third parties that become due and payable on the achievement of certain development, regulatory and commercial milestones (such as the start of a clinical trial, filing of a BLA, approval by the FDA or product launch). We have not included these commitments on our balance sheet or in the table above because the achievement and timing of these milestones is not fixed and determinable. These commitments include:

- In connection with the Pregenen acquisition, we agreed to make contingent cash payments to the former equityholders of Pregenen. In accordance with accounting for business combinations guidance, these contingent cash payments are recorded as contingent consideration liabilities on our consolidated balance sheets at fair value. During the second quarter of 2015, a $1.0 million milestone was achieved, which resulted in a $1.0 million payment to the former equityholders of Pregenen during the third quarter of 2015. The aggregate remaining undiscounted amount of contingent consideration potentially payable is $134.0 million.
- Under a license agreement with Inserm-Transfert pursuant to which we license certain patents for use in human adrenoleukodystrophy therapy, we will be required to make payments based upon development, regulatory and commercial milestones for any products covered by the in-licensed intellectual property. The maximum aggregate payments we may be obligated to pay for each of these milestone categories per product is €0.3, €0.2 and €1.6 million, respectively. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low single digits. The royalty is subject to reduction for any third-party payments required to be made, with a minimum floor in the low single digits.
- Under a license agreement with Institut Pasteur pursuant to which we license certain patents for use in *ex vivo* gene therapy, we will be required to make payments per product covered by the in-licensed intellectual property upon the achievement of development and regulatory milestones, depending on the indication and the method of treatment. The maximum aggregate payments we may be obligated to pay for each of these milestone categories per product is €1.5 and €2.0 million, respectively. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low single digits, which varies slightly depending on the indication of the product. We have the right to sublicense our rights under this agreement, and we will be required to pay a percentage of such license income varying from the low single digits to mid-double digits depending on the nature of the sublicense and stage of development. Starting in 2016, we will be required to make an annual maintenance payment, which is creditable against royalty payments on a year-by-year basis. On April 1, 2015, we amended this license agreement with Institut Pasteur, which resulted in a payment of $3.3 million (€3.0 million) that was paid during the second quarter of 2015.
- Under a license agreement with the Board of Trustees of the Leland Stanford Junior University, or Stanford, pursuant to which we license the HEK293T cell line for use in gene therapy products, we are required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low single digits that varies with net sales. The royalty is reduced for each third-party license that requires payments by us with respect to a licensed product, provided that the royalty to Stanford is not less than a specified percentage that is less than one percent. We are required to pay Stanford an annual maintenance fee based on net sales of licensed products, which is creditable against our royalty payments.
- Under a license agreement with the Massachusetts Institute of Technology, or MIT, pursuant to which we license various patents, we will be required to make a payment of $0.1 million based upon a regulatory filing milestone. We will also be

required to pay a royalty on net sales of products covered by the in-licensed intellectual property by us or our sublicensees. The royalty is in the low single digits and is reduced for royalties payable to third parties, provided that the royalty to MIT is not less than a specified percentage that is less than one percent. We have the right to sublicense our rights under this agreement, and we will be required to pay a percentage of such license income varying from the mid-single digits to low double digits. We are required to pay MIT an annual maintenance fee based on net sales of licensed products, which is creditable against our royalty payments.

- Under a license agreement with Research Development Foundation pursuant to which we license patents that involve lentiviral vectors, we will be required to make payments of $1.0 million based upon a regulatory milestone for each product covered by the in-licensed intellectual property. We will also be required to pay a royalty on net sales of products covered by the in-licensed intellectual property in the low single digits, which is reduced by half if during the ten year following first marketing approval the last valid claim within the licensed patent that covers the licensed product expires or ends.

We enter into contracts in the normal course of business with CROs for preclinical research studies, research supplies and other services and products for operating purposes. These contracts generally provide for termination on notice, and therefore are cancelable contracts and not included in the table of contractual obligations and commitments

On June 3, 2013, we entered into a nine-year building lease for approximately 43,600 square feet of space located at 150 Second Street, Cambridge, Massachusetts, commencing on the earlier of the substantial completion of our build-out work or January 1, 2014. This lease was amended in June 2014 to add an additional approximately 9,900 square feet. The lease originally had monthly lease payments of $0.2 million for the first 12 months, which increased to $0.3 million per month beginning in December 2014 due to the lease amendment, with annual rent escalations thereafter and provides a rent abatement of $0.2 million per month for the first six months. The total operating lease obligation of the noncancellable term of this agreement is $29.5 million. In addition, the lease provides a contribution from the landlord towards the initial build-out of the space of up to $7.8 million. We have the option to extend this lease by an additional five years. In accordance with the lease, we entered into a cash-collateralized irrevocable standby letter of credit in the amount of $1.3 million, naming the landlord as beneficiary. This letter of credit was reduced to $0.8 million during the second quarter of 2015, which was the first anniversary of the rent commencement date, and may be further reduced to $0.6 million upon the second anniversary of the rent commencement date.

On June 29, 2015, we entered into a lease agreement for additional office space located at 215 First Street, Cambridge, Massachusetts. Under the terms of the lease, we leased approximately 15,120 square feet starting on July 13, 2015 for $483,840 per year in base rent, which is subject to a 3% annual rent increase plus certain operating expenses and taxes. The lease will continue until the end of the 60th full calendar month following the date the landlord delivers the premises to us, and includes early termination provisions that could allow us to terminate the lease at the end of the 20th full calendar month following the delivery of the premises if we meet certain conditions specified within the lease. Under the terms of the lease, we will also lease an additional 8,075 square feet of office space in the same premises starting on January 1, 2016 for an additional $258,400 per year in base rent, which is subject to a 3% annual rent increase plus certain operating expenses and taxes.

On September 21, 2015, we entered into a lease agreement for additional office and laboratory space located in a building under construction at 60 Binney Street, Cambridge, Massachusetts. Under the terms of the lease, starting on October 1, 2016, we will lease approximately 253,108 square feet at $72.50 per square foot per year, or $18.4 million per year in base rent, which is subject to scheduled annual rent increases of 1.75% plus certain operating expenses and taxes. We also executed a $9.2 million letter of credit upon signing the lease, which was required to be collateralized with a bank account at a financial institution in accordance with the lease agreement. The lease will continue until the end of the 120th full calendar month following April 2017 or the earlier the date we occupy the building or other conditions specified in the lease occur. Pursuant to a work letter entered into in connection with the lease, the landlord will contribute an aggregate of $42.4 million toward the cost of construction and tenant improvements for the building. The purpose of the lease is to supplement and eventually replace our current leased premises at 150 Second Street and 215 First Street in Cambridge, Massachusetts and we intend to move our corporate headquarters to 60 Binney Street in mid-2017. We have the option to extend the lease for two successive five-year terms.

We also lease approximately 7,800 square feet of office and laboratory space in Seattle, Washington, which lease expires in December 2016.

Off-Balance Sheet Arrangements

As of September 30, 2015, we did not have any off-balance sheet arrangements as defined in the rules and regulations of the SEC.

Item 3. Quantitative and Qualitative Disclosures about Market Risks

We are exposed to market risk related to changes in interest rates. As of September 30, 2015 and December 31, 2014, we had cash, cash equivalents and marketable securities of $901.7 million and $492.0 million, respectively, primarily invested in U.S. government agency securities, federally insured certificates of deposit and money market mutual funds invested in U.S. Treasuries or U.S. government agency 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 are in short-term securities. Our available for sale securities are subject to interest rate risk and will fall in value if market interest rates increase. If market interest rates were to increase immediately and uniformly by 100 basis points, or one percentage point, from levels at September 30, 2015, the net fair value of our interest-sensitive marketable securities would have resulted in a hypothetical decline of approximately $5.1 million.

Item 4. Controls and Procedures

Management's Evaluation of our Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Securities and Exchange Act of 1934 is (1) recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms and (2) accumulated and communicated to our management, including our principal executive officer and principal financial officer, to allow timely decisions regarding required disclosure.

As of September 30, 2015, our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities and Exchange Act of 1934). 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 management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our principal executive officer and principal financial officer have concluded based upon the evaluation described above that, as of September 30, 2015, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

During the quarter ended September 30, 2015, there have been no changes in our internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15(d)-15(f) promulgated under the Securities Exchange Act of 1934, 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

In the ordinary course of business, we are from time to time involved in lawsuits, claims, investigations, proceedings, and threats of litigation relating to intellectual property, commercial arrangements, employment and other matters. While the outcome of these proceedings and claims cannot be predicted with certainty, as of September 30, 2015, we were not party to any legal or arbitration proceedings that may have, or have had in the recent past, significant effects on our financial position. No governmental proceedings are pending or, to our knowledge, contemplated against us. We are not a party to any material proceedings in which any director, member of executive management or affiliate of ours is either a party adverse to us or our subsidiaries or has a material interest adverse to us or our subsidiaries.

Item 1A. Risk Factors

An investment in shares of our common stock involves a high degree of risk. You should carefully consider the following information about these risks, together with the other information appearing elsewhere in this Quarterly Report on Form 10-Q, including our financial statements and related notes hereto, before deciding to invest in our common stock. The occurrence of any of the following risks could have a material adverse effect on our business, financial condition, results of operations and future growth prospects. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment.

Those risk factors below denoted with a "" are newly added or have been materially updated from our Annual Report on 10-K filed with the Securities and Exchange Commission, or the SEC, on February 25, 2015.*

Risks related to the discovery and development of our product candidates

Our gene therapy product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. At the moment, no gene therapy products have been approved in the United States and only one product has been approved in the European Union, or EU.

We have concentrated our therapeutic product research and development efforts on our gene therapy platform, and our future success depends on the successful development of this therapeutic approach. There can be no assurance that any development problems we experience in the future related to our gene therapy platform 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 commercial-scale manufacturing process or transferring that process to commercial partners, which may prevent us from completing our clinical studies or commercializing our products on a timely or profitable basis, if at all.

In addition, the clinical study requirements of the U.S. Food and Drug Administration, or FDA, the European Medicines Agency, or EMA, and other regulatory agencies 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 extensively studied pharmaceutical or other product candidates. At the moment, only one gene therapy product, UniQure's Glybera, which received marketing authorization in the EU in 2012, has been approved in the Western world, which makes it difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in the United States, the EU or other jurisdictions. Approvals by the EMA and the European Commission may not be indicative of what the FDA may require for approval.

Regulatory requirements governing gene and cell therapy products have evolved and may continue to change in the future. For example, the FDA has established the Office of Cellular, Tissue and Gene Therapies within its Center for Biologics Evaluation and Research, or 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 studies conducted at institutions that receive funding for recombinant DNA research from the U.S. National Institutes of Health, or the NIH, are also subject to review by the NIH Office of Biotechnology Activities' Recombinant DNA Advisory Committee, or the RAC. Although the FDA decides whether individual gene therapy protocols may proceed, the RAC review process can impede the initiation of a clinical study, even if the FDA has reviewed the study and approved its initiation. For example, although we believe we reached general agreement with the FDA on the design of our planned HGB-208 pediatric study protocol for our LentiGlobin product candidate, in June 2015, the RAC completed its public review and recommended a delay of initiation of the HGB-208 study in the United States for an additional one to two years. We cannot predict if this recommendation may delay enrollment of the HGB-208 study. Clinical trial sites in the United States that receive NIH funding for research involving recombinant or synthetic nucleic acid molecules are required to follow RAC recommendations, or risk losing NIH funding for such research or needing NIH pre-approval before conducting such research. In addition, the FDA can put an investigational new drug application, or IND, on clinical hold if the information in an IND is not sufficient to assess the risks in pediatric patients. Before a clinical study can begin at any institution, that institution's institutional review board, or IRB, and its Institutional Biosafety Committee will have to review the proposed clinical study to assess the safety of the study. Moreover, serious adverse events or developments in clinical trials of gene therapy product candidates conducted by others may cause the FDA or other regulatory bodies to initiate a clinical hold on our clinical trials or otherwise change the requirements for approval of any of our product candidates.

These regulatory review agencies, committees and advisory groups and the new requirements and guidelines they promulgate may lengthen the regulatory review process, require us to perform additional or larger studies, 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 product candidates, we will be required to consult with these regulatory and advisory groups and comply with applicable requirements and guidelines. If we fail to do so, we may be required to delay or discontinue development of our product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product to market could decrease our ability to generate sufficient product revenue to maintain our business.

We may find it difficult to enroll patients in our clinical studies, which could delay or prevent clinical studies of our product candidates.

Identifying and qualifying patients to participate in clinical studies of our product candidates is critical to our success. The timing of our clinical studies depends on the speed at which we can recruit patients to participate in testing our product candidates. We have experienced delays in some of our clinical studies, and we may experience similar delays in the future. If patients are unwilling to participate in our gene therapy studies because of negative publicity from adverse events in the biotechnology or gene therapy industries or for other reasons, including competitive clinical studies for similar patient populations, the timeline for recruiting

patients, conducting studies and obtaining regulatory approval of potential products may be delayed. These delays could result in increased costs, delays in advancing our product development, delays in testing the effectiveness of our technology or termination of the clinical studies altogether.

We may not be able to identify, recruit and enroll a sufficient number of patients, or those with required or desired characteristics to achieve diversity in a study, to complete our clinical studies in a timely manner. Patient enrollment is affected by factors including:

- severity of the disease under investigation;
- design of the study protocol;
- size of the patient population;
- eligibility criteria for the study in question;
- perceived risks and benefits of the product candidate under study;
- proximity and availability of clinical study sites for prospective patients;
- availability of competing therapies and clinical studies;
- efforts to facilitate timely enrollment in clinical studies;
- patient referral practices of physicians; and
- ability to monitor patients adequately during and after treatment.

In particular, each of the conditions for which we plan to evaluate our current product candidates are rare genetic disorders with limited patient pools from which to draw for clinical studies. It has been estimated that about 1.5% (80 to 90 million people) of the global population are carriers of beta-thalassemia, with about 60,000 symptomatic individuals born annually, the great majority in the developing world. According to Thalassemia International Federation, about 288,000 patients with beta-thalassemia major are alive and registered as receiving regular treatment around the world, of which we estimate that about 10,000-15,000 live in the United States and Europe. The global incidence of SCD is estimated to be 250,000-300,000 births annually with a global prevalence estimated to be about 20-25 million. The worldwide incidence rate for adrenoleukodystrophy, or ALD, the superset of CCALD, is approximately one in 20,000 newborn males. CCALD accounts for about 30-40% of patients diagnosed with ALD. Further, because newborn screening for CCALD is not widely adopted, and it can be difficult to diagnose CCALD in the absence of a genetic screen, we may have difficulty finding patients who are eligible to participate in our study. The eligibility criteria of our clinical studies will further limit the pool of available study participants. Additionally, the process of finding and diagnosing patients may prove costly. Finally, our treatment process requires that the procurement of autologous cells from subjects be conducted where the cells can be shipped to a transduction facility within the required timelines, as the hematopoietic stem cells, or HSCs, have limited viability following harvest.

Our current product candidates are being developed to treat rare conditions and certain cancers. We plan to seek initial marketing approval in the United States and the European Union. We may not be able to initiate or continue clinical studies if we cannot enroll a sufficient number of eligible patients to participate in the clinical studies required by the FDA or the EMA or other regulatory agencies. Our ability to successfully initiate, enroll and complete a clinical study in any foreign country is subject to numerous risks unique to conducting business in foreign countries, including:

- difficulty in establishing or managing relationships with contract research organizations, or CROs, and physicians;
- different standards for the conduct of clinical studies;
- our inability to locate qualified local consultants, physicians and partners; and
- the 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.

If we have difficulty enrolling a sufficient number of patients to conduct our clinical studies as planned, we may need to delay, limit or terminate ongoing or planned clinical studies, any of which would have an adverse effect on our business.

We may encounter substantial delays in our clinical studies or we may fail to demonstrate safety and efficacy to the satisfaction of applicable regulatory authorities.

Before obtaining marketing approval from regulatory authorities for the sale of our product candidates, we must conduct extensive clinical studies to demonstrate the safety, purity and potency, or efficacy, of the product candidates in humans. Clinical testing is expensive, time-consuming and uncertain as to outcome. We cannot guarantee that any clinical studies will be conducted as planned or completed on schedule, if at all. A failure of one or more clinical studies can occur at any stage of testing. Events that may prevent successful or timely completion of clinical development include:

- delays in reaching a consensus with regulatory agencies on study design;
- delays in obtaining required Institutional Review Board, or IRB, or Institutional Ethics Committee approval at each clinical study site;
- delays in recruiting suitable patients to participate in our clinical studies;
- imposition of a clinical hold by regulatory agencies, after an inspection of our clinical study operations or study sites or due to unforeseen safety issues;
- failure by our CROs, other third parties or us to adhere to clinical study requirements;
- failure to perform in accordance with the FDA's good clinical practices, or GCP, or applicable regulatory requirements in other countries;
- delays in the testing, validation, manufacturing and delivery of our product candidates to the clinical sites;
- failure to obtain sufficient cells from patients to manufacture enough drug product or achieve target cell doses;
- delays in having patients complete participation in a study or return for post-treatment follow-up;
- clinical study sites or patients dropping out of a study;
- occurrence of serious adverse events associated with the product candidate that are viewed to outweigh its potential benefits; or
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols.

Any inability to successfully complete preclinical and clinical development could result in additional costs to us or impair our ability to generate revenues from product sales, regulatory and commercialization milestones and royalties. In addition, if we make manufacturing or formulation changes to our product candidates, we may need to conduct additional studies to demonstrate comparability of our modified product candidates to earlier versions. Clinical study delays could also shorten any periods during which we may have the exclusive right to commercialize our product candidates or allow our competitors to bring products to market before we do, which could impair our ability to successfully commercialize our product candidates and may harm our business and results of operations.

If the results of our clinical studies are inconclusive or if there are safety concerns or adverse events associated with our product candidates, we may:

- be delayed in obtaining regulatory approval for our product candidates, if 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;
- be required to perform additional clinical studies or clinical studies of longer duration to support approval or be subject to additional post-marketing testing requirements;
- have regulatory authorities withdraw their approval of the product or impose restrictions on its use;
- be subject to the addition of labeling statements, such as warnings or contraindications;
- be sued; or
- experience damage to our reputation.

Treatment with our gene therapy product candidates involves chemotherapy and myeloablative treatments, which can cause side effects or adverse events that are unrelated to our product candidate, but may still impact the success of our clinical studies. Additionally, our product candidates could potentially cause other adverse events that have not yet been predicted. The inclusion of

critically ill patients in our clinical studies may result in deaths or other adverse medical events due to other therapies or medications that such patients may be using. As described above, any of these events could prevent us from achieving or maintaining market acceptance of our product candidates and impair our ability to commercialize our products.

We have not completed any clinical studies of our current viral vectors or product candidates derived from these viral vectors. Success in early clinical studies may not be indicative of results obtained in later studies.

Our current viral vectors and our product candidates first initiated evaluation in human clinical studies in 2013, and we may experience unexpected results in the future. Earlier gene therapy clinical studies, which we believe serve as proof-of-concept for our product candidates, utilized lentiviral vectors similar to ours. However, these studies should not be relied upon as evidence that our future clinical studies will succeed. Study designs and results from previous studies are not necessarily predictive of our future clinical study designs or results, and initial results may not be confirmed upon full analysis of the complete study data. Our product candidates may also fail to show the desired safety and efficacy in later stages of clinical development despite having successfully advanced through initial clinical studies.

There is a high failure rate for drugs and biologics proceeding through clinical studies. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in later stage clinical studies even after achieving promising results in earlier stage clinical studies. 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.

Initial success in our ongoing clinical studies may not be indicative of results obtained when these studies are completed.

In December 2014, at the Annual Meeting of the American Society of Hematology (ASH), we announced data from the first eight subjects treated with our LentiGlobin product candidate. In June 2015, at the 20th Congress of the European Hematology Association, we announced long-term follow up of two patients with beta-thalassemia major and early safety and efficacy data in the first patient with severe SCD treated with our LentiGlobin product candidate in the HGB 205 Study. Although the initial clinical data on these subjects are encouraging, the data are preliminary in nature, based on limited periods of time since patient infusion, and the Northstar and HGB-205 Studies are not complete. There is limited data concerning long-term safety and efficacy following treatment with LentiGlobin drug product. These data, or other positive data, may not continue or occur for these subjects or for any future subjects in this study, and may not be repeated or observed in ongoing or future studies involving our LentiGlobin product candidate, including the HGB-205 Study, the Northstar Study or the HGB-206 Study in severe SCD. There can be no assurance that subjects for whom periodic transfusion support has been reduced or temporarily eliminated will not receive transfusion support in the future. Furthermore, there can be no assurance that any of these studies will ultimately be successful or support further clinical advancement of this product candidate. There is a high failure rate for drugs and biologics proceeding through clinical studies. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in clinical development even after achieving promising results in earlier studies, and any such setbacks in our clinical development could have a material adverse effect on our business and operating results.

**** The results from our Starbeam Study may not be sufficiently robust to support the submission of marketing approval for our Lenti-D product candidate. Before we submit Lenti-D for marketing approval, the FDA and the EMA may require us to enroll additional subjects, conduct additional clinical studies, or evaluate subjects for an additional follow-up period.***

The FDA has advised us that our Starbeam Study, which is a single-arm, open-label study to evaluate the safety and efficacy of our Lenti-D product candidate to halt the progression of CCALD, may not be deemed to be a pivotal study or may not provide sufficient support for a Biologics License Application, or BLA, submission. The FDA normally requires two pivotal clinical studies to approve a drug or biologic product, and thus the FDA may require that we conduct larger or additional clinical studies of Lenti-D prior to a BLA submission. The FDA typically does not consider a single clinical study to be adequate to serve as a pivotal study unless it is, among other things, well-controlled and demonstrates a clinically meaningful effect on mortality, irreversible morbidity, or prevention of a disease with potentially serious outcome, and a confirmatory study would be practically or ethically impossible. Due to the nature of CCALD and the limited number of patients with this condition, we believe a placebo-controlled and blinded study is not practicable for ethical and other reasons. However, it is still possible that, even if we achieve favorable results in the Starbeam Study, the FDA may require us to enroll additional subjects or conduct additional clinical studies, possibly involving a larger sample size or a different clinical study design, particularly if the FDA does not find the results from the Starbeam Study to be sufficiently persuasive to support a BLA submission. The FDA may also require that we conduct a longer follow-up period of subjects treated with our Lenti-D product candidate prior to accepting our BLA submission.

In addition, the Starbeam Study was not designed to achieve a statistically significant efficacy determination. Rather, we anticipate that Lenti-D safety and efficacy will be evaluated in light of the data collected in our retrospective ALD-101 Study and

potentially our observational ALD-103 study. However, due to the retrospective nature of the ALD-101 study, and the limited number of patients with this condition, the FDA has advised us that the ALD-101 Study is not sufficiently robust to serve as a conventional historical control group and as a basis of comparison against the results of the Starbeam Study. Thus, we expect that the FDA will assess the totality of the safety and efficacy data from our CCALD clinical studies in reviewing any future BLA submission for our Lenti-D product candidate. Based on this assessment, the FDA may require that we conduct additional preclinical or clinical studies prior to submitting or approving a BLA for this indication.

It is possible that the FDA or the EMA may not consider the results of this study to be sufficient for approval of Lenti-D for this indication. If the FDA or the EMA requires additional studies, we would incur increased costs and delays in the marketing approval process, which may require us to expend more resources than we have available. In addition, it is possible that the FDA and the EMA may have divergent opinions on the elements necessary for a successful BLA and Marketing Authorization Application, or MAA, respectively, which may cause us to alter our development, regulatory and/or commercialization strategies.

We cannot be certain that our planned HGB-207 and HGB-208 clinical trials of LentiGlobin, together with data from our ongoing beta-thalassemia major clinical studies (Northstar and HGB-205), will be sufficient to form the basis for a Biologics License Application, or BLA, submission for LentiGlobin.

In general, the FDA requires the successful completion of two pivotal trials to support approval of a BLA, but in certain circumstances, will approve a BLA based on only one pivotal trial. If successful, we believe the results from our planned clinical trials, called HGB-207, for adult and adolescent patients with beta-thalassemia major, and HGB-208, for pediatric patients with beta-thalassemia major, together with data from our ongoing beta-thalassemia major clinical studies (Northstar and HGB-205), could be sufficient to form the basis for a BLA submission for LentiGlobin to treat patients with beta-thalassemia major. However, it should be noted that our ability to submit and obtain approval of a BLA is ultimately an FDA review decision, which will be dependent upon the data available at such time, and the available data may not be sufficiently robust from a safety and/or efficacy perspective to support the submission or approval of a BLA. Depending on the outcome of these planned and ongoing clinical trials, the FDA may require that we conduct additional or larger pivotal trials before we can submit or obtain approval for a BLA for LentiGlobin.

In June 2015, the RAC recommended that we delay the initiation of the HGB-208 trial for pediatric patients with beta-thalassemia major for one to two years. Any delay in the initiation or completion of the HGB-208 clinical trial could similarly delay our ability to submit a BLA for LentiGlobin or obtain full approval in Europe.

In addition, while we believe we and the FDA are in general agreement on the design and key elements of our planned HGB-207 and HGB-208 clinical trials of LentiGlobin , before beginning these trials, the FDA must review the final protocols for the trials, along with additional information supporting the respective proposed trial designs. Concurrent with starting the trial, the FDA will review certain updated chemistry, manufacturing and controls, or CMC, information that we are required to submit. If the FDA does not approve the protocols for the planned trials in the forms in which we submit them, or if the FDA is not satisfied with the additional CMC information we plan to provide, the start or continuation of these clinical trials may be delayed or the design of the trials may change.

There can be no assurance that we will ultimately receive conditional marketing approval of LentiGlobin in the European Union, or the nature of the conditions that would be imposed on us if conditionally approved.

The EMA Adaptive Pathways program in which we are participating is intended to facilitate either an initial approval in a well-defined patient subgroup with a high medical need and subsequent widening of the indication to a larger patient population, or an early regulatory approval (e.g. conditional approval), which is prospectively planned, and where uncertainty is reduced through the collection of post-approval data on a drug's use in patients. Based on our discussions with the EMA, we believe our LentiGlobin product candidate may be eligible for conditional approval under this program for the treatment of patients with beta-thalassemia major on the basis of the totality of clinical data, in particular reduction in transfusion need, from the ongoing Northstar study and supportive HGB-205 study.

However, it should be noted that the EMA Adaptive Pathways program is a pilot program, and as such there is limited information and precedent regarding the potential outcomes for sponsors that participate in this program. Whether our LentiGlobin product candidate is eligible for conditional approval will ultimately be determined at the discretion of the EMA and will be dependent upon the data available at such time, and the available data may not be sufficiently robust from a safety and/or efficacy perspective to support conditional approval. Depending on the outcome of our planned and ongoing clinical trials, the EMA may require that we conduct additional or larger clinical trials before LentiGlobin is eligible for conditional approval. Even if conditional approval is obtained, the conditions to be imposed on us under this program are unknown and will be imposed at the time of any such conditional approval.

In previous clinical studies involving viral vectors for gene therapy, some subjects experienced serious adverse events, including the development of leukemia due to vector-related insertional oncogenesis. If our vectors demonstrate a similar effect, we may be required to halt or delay further clinical development of our product candidates.

A significant risk in any gene therapy product based on viral vectors is that the vector will insert in or near cancer-causing oncogenes leading to uncontrolled clonal proliferation of mature cancer cells in the patient. For example, in 2003, 20 subjects treated for X-linked severe combined immunodeficiency in two gene therapy studies using a murine, or mouse-derived, gamma-retroviral vector showed correction of the disease, but the studies were terminated after five subjects developed leukemia (four of whom were subsequently cured). The cause of these adverse events was shown to be insertional oncogenesis, which is the process whereby the corrected gene inserts in or near a gene that is important in a critical cellular process like growth or division, and this insertion results in the development of a cancer (often leukemia). Using molecular diagnostic techniques, it was determined that clones from these subjects showed retrovirus insertion in proximity to the promoter of the LMO2 proto-oncogene. Earlier generation retroviruses like the one used in these two studies have been shown to preferentially integrate in regulatory regions of genes that control cell growth.

These well-publicized adverse events led to the development of new viral vectors, such as lentiviral vectors, with improved safety profiles and also the requirement of enhanced safety monitoring in gene therapy clinical trials, including periodic analyses of the therapy's genetic insertion sites. In published studies, lentiviral vectors have demonstrated an improved safety profile over gamma-retroviral vectors, with no disclosed events of gene therapy-related adverse events, which we believe is due to a number of factors including the tendency of these vectors to integrate within genes rather than in areas that control gene expression, as well as their lack of strong viral enhancers. However, it should be noted that in our Phase I/II study (the LG001 Study) of autologous HSCs transduced *ex vivo* using an earlier generation of our LentiGlobin vector, called HPV569, we initially observed in one subject that a disproportionate number of the cells expressing our functional gene had the same insertion site. Tests showed that this partial clonal dominance contained an insertion of the functional gene in the HMGA2 gene that persisted for a period of two to three years. Although there was some initial concern that the observed clonal dominance might represent a pre-leukemic event, there have been no adverse clinical consequences of this event, or any signs of cancer, in over seven years since the observation was made. The presence of the HMGA2 clone has steadily declined in this subject over time to the point that it is no longer the most common clone observed in this subject.

Notwithstanding the historical data regarding the potential safety improvements of lentiviral vectors, the risk of insertional oncogenesis remains a significant concern for gene therapy and we cannot assure that it will not occur in any of our ongoing or planned clinical studies. There is also the potential risk of delayed adverse events following exposure to gene therapy products due to persistent biological activity of the genetic material or other components of products used to carry the genetic material. The FDA has stated that lentiviral vectors possess characteristics that may pose high risks of delayed adverse events. If any such adverse events occur, further advancement of our clinical studies could be halted or delayed, which would have a material adverse effect on our business and operations.

Even if we complete the necessary preclinical and clinical studies, we cannot predict when or if we will obtain regulatory approval to commercialize a product candidate or the approval may be for a more narrow indication than we expect.

We cannot commercialize a product until the appropriate regulatory authorities have reviewed and approved the product candidate. Even if our product candidates demonstrate safety and efficacy in clinical studies, the regulatory agencies 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 advisory group or 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 agency policy during the period of product development, clinical studies and the review process. Regulatory agencies also may approve a treatment candidate for fewer or more limited indications than requested or may grant approval subject to the performance of post-marketing studies. In addition, regulatory agencies may not approve the labeling claims that are necessary or desirable for the successful commercialization of our treatment candidates. For example, the development of our product candidates for pediatric use is an important part of our current business strategy, and if we are unable to obtain regulatory approval for the desired age ranges, our business may suffer.

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

Even if we obtain regulatory approval in a jurisdiction, the regulatory authority may still impose significant restrictions on the indicated uses or marketing of our product candidates, or impose ongoing requirements for potentially costly post-approval studies or post-market surveillance. For example, the FDA typically advises that patients treated with gene therapy undergo follow-up observations for potential adverse events for a 15-year period. Additionally, the holder of an approved BLA is obligated to monitor and report adverse events and any failure of a product to meet the specifications in the BLA. The holder of an approved BLA must also submit new or supplemental applications and obtain FDA approval for certain changes to the approved product, product labeling

or manufacturing process. Advertising and promotional materials must comply with FDA rules and are subject to FDA review, in addition to other potentially applicable federal and state laws.

In addition, product manufacturers and their facilities are subject to payment of user fees and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with good manufacturing practices, or GMP, and adherence to commitments made in the BLA. If we or a regulatory agency discovers previously unknown problems with a product such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, a regulatory agency may impose restrictions relative to that product or the manufacturing facility, including requiring recall or withdrawal of the product from the market or suspension of manufacturing.

If we fail to comply with applicable regulatory requirements following approval of any of our product candidates, a regulatory agency may:

- issue a warning letter asserting that we are in violation of the law;
- seek an injunction or impose civil or criminal penalties or monetary fines;
- suspend or withdraw regulatory approval;
- suspend any ongoing clinical studies;
- refuse to approve a pending marketing application, such as a BLA or supplements to a BLA submitted by us;
- seize product; or
- refuse to allow us to enter into supply contracts, including government contracts.

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 our product candidates and generate revenues.

Risks related to our reliance on third parties

We expect to rely on third parties to conduct some or all aspects of our vector production, drug product manufacturing, research and preclinical and clinical testing, and these third parties may not perform satisfactorily.

We do not expect to independently conduct all aspects of our vector production, product manufacturing, research and preclinical and clinical testing. We currently rely, and expect to continue to rely, on third parties with respect to these items. In some cases these third parties are academic, research or similar institutions that may not apply the same quality control protocols utilized in certain commercial settings.

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 responsibility to ensure compliance with all required regulations and study protocols. For example, for product candidates that we develop and commercialize on our own, we will remain responsible for ensuring that each of our IND-enabling studies and clinical studies are conducted in accordance with the study plan and protocols.

If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our studies in accordance with regulatory requirements or our stated study plans and protocols, we will not be able to complete, or may be delayed in completing, the preclinical and clinical studies required to support future IND and BLA submissions and approval of our product candidates.

Any of these third parties may terminate their engagements with us at any time. If we need to enter into alternative arrangements, it could delay our product development activities.

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

- the inability to negotiate manufacturing agreements with third parties under commercially reasonable terms;
- reduced control as a result of using third-party manufacturers for all aspects of manufacturing activities;
- the risk that these activities are not conducted in accordance with our study plans and protocols;

- termination or nonrenewal of manufacturing agreements with third parties in a manner or at a time that is costly or damaging to us; and
- disruptions to the operations of our third-party manufacturers or suppliers caused by conditions unrelated to our business or operations, including the bankruptcy of the manufacturer or supplier.

Any of these events could lead to clinical study delays or failure to obtain regulatory approval, or impact our ability to successfully commercialize future products. Some of these events could be the basis for FDA action, including injunction, recall, seizure or total or partial suspension of production.

We and our contract manufacturers are subject to significant regulation with respect to manufacturing our products. The manufacturing facilities on which we rely may not continue to meet regulatory requirements and have limited capacity.

We currently have relationships with a limited number of suppliers for the manufacturing of our viral vectors and product candidates. Each supplier may require licenses to manufacture such components if such processes are not owned by the supplier or in the public domain and we may be unable to transfer or sublicense the intellectual property rights we may have with respect to such activities.

All entities involved in the preparation of therapeutics for clinical studies or commercial sale, including our existing contract manufacturers for our product candidates, are subject to extensive regulation. Some components of a finished therapeutic product approved for commercial sale or used in late-stage clinical studies must be manufactured in accordance with GMP. These regulations govern manufacturing processes and procedures (including record keeping) and the implementation and operation of quality systems to control and assure the quality of investigational products and products approved for sale. Poor control of production processes can lead to the introduction of adventitious agents or other contaminants, or to inadvertent changes in the properties or stability of our product candidates that may not be detectable in final product testing. We or our contract manufacturers must supply all necessary documentation in support of a BLA or MAA on a timely basis and where required, must adhere to the FDA's or other regulator's good laboratory practices, or GLP, and GMP regulations enforced by the FDA or other regulator through facilities inspection programs. Some of our contract manufacturers have not produced a commercially-approved product and therefore have not obtained the requisite FDA or other regulatory approvals to do so. Our facilities and quality systems and the facilities and quality systems of some or all of our third-party contractors must pass a pre-approval inspection for compliance with the applicable regulations as a condition of regulatory approval of our product candidates or any of our other potential products. In addition, the regulatory authorities may, at any time, audit or inspect a manufacturing facility involved with the preparation of our product candidates or our other potential products or the associated quality systems for compliance with the regulations applicable to the activities being conducted. If these facilities do not pass a pre-approval plant inspection, FDA or other regulatory approval of the products will not be granted.

The regulatory authorities also may, at any time following approval of a product for sale, audit the manufacturing facilities of our third-party contractors. If any such inspection or audit identifies a failure to comply with applicable regulations or if a violation of our product specifications or applicable regulations occurs independent of such an inspection or audit, we or the relevant regulatory authority may require remedial measures that may be costly and/or time-consuming for us or a third party to implement and that may include the temporary or permanent suspension of a clinical study or commercial sales or the temporary or permanent closure of a facility. Any such remedial measures imposed upon us or third parties with whom we contract could materially harm our business.

If we or any of our third-party manufacturers fail to maintain regulatory compliance, the FDA or other regulators can impose regulatory sanctions including, among other things, refusal to approve a pending application for a biologic product, or revocation of a pre-existing approval. As a result, our business, financial condition and results of operations may be materially harmed.

Additionally, if supply from one approved manufacturer is interrupted, there could be a significant disruption in commercial supply. The number of manufacturers with the necessary manufacturing capabilities is limited. In addition, an alternative manufacturer would need to be qualified through a BLA supplement or similar regulatory submission which could result in further delay. The regulatory agencies may also require additional studies if a new manufacturer is relied upon for commercial production. Switching manufacturers may involve substantial costs and is likely to result in a delay in our desired clinical and commercial timelines.

These factors could cause the delay of clinical studies, regulatory submissions, required approvals or commercialization of our product candidates, cause us to incur higher costs and prevent us from commercializing our products successfully. Furthermore, if our suppliers fail to meet contractual requirements, and we are unable to secure one or more replacement suppliers capable of production at a substantially equivalent cost, our clinical studies may be delayed or we could lose potential revenue.

We expect to rely on third parties to conduct, supervise and monitor our clinical studies, and if these third parties perform in an unsatisfactory manner, it may harm our business.

We expect to rely on CROs and clinical study sites to ensure our clinical studies are conducted properly and on time. While we will have agreements governing their activities, we will have limited influence over their actual performance. We will control only certain aspects of our CROs' activities. Nevertheless, we will be responsible for ensuring that each of our clinical studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on the CROs does not relieve us of our regulatory responsibilities.

We and our CROs are required to comply with the FDA's GCPs for conducting, recording and reporting the results of clinical studies to assure that the data and reported results are credible and accurate and that the rights, integrity and confidentiality of clinical study participants are protected. The FDA enforces these GCPs through periodic inspections of study sponsors, principal investigators and clinical study sites. If we or our CROs fail to comply with applicable GCPs, the clinical data generated in our future clinical studies may be deemed unreliable and the FDA may require us to perform additional clinical studies before approving any marketing applications. Upon inspection, the FDA may determine that our clinical studies did not comply with GCPs. In addition, our future clinical studies will require a sufficient number of test subjects to evaluate the safety and efficacy of our product candidates. Accordingly, if our CROs fail to comply with these regulations or fail to recruit a sufficient number of patients, we may be required to repeat such clinical studies, which would delay the regulatory approval process.

Employees of our CROs are not our employees, and we are therefore unable to directly monitor whether or not they devote sufficient time and resources to our clinical and nonclinical programs, which must be conducted in accordance with GCPs and GLPs, respectively. These CROs may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical studies or other drug development activities that could harm our competitive position. If our CROs do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements, or for any other reasons, our clinical studies may be extended, delayed or terminated, and we may not be able to obtain regulatory approval for, or successfully commercialize our product candidates. As a result, our financial results and the commercial prospects for our product candidates would be harmed, our costs could increase, and our ability to generate revenues could be delayed.

We also expect to rely on other third parties to store and distribute our vectors and products for any clinical studies that we may conduct. Any performance failure on the part of our distributors could delay clinical development or marketing approval of our product candidates or commercialization of our products, if approved, producing additional losses and depriving us of potential product revenue.

Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Because we rely on third parties to manufacture our vectors and our product candidates, and because we collaborate with various organizations and academic institutions on the advancement of our gene therapy platform, we must, at times, share trade secrets with them. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, collaborative research agreements, consulting agreements or other similar agreements with our collaborators, advisors, employees and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, such as trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have a material adverse effect on our business.

In addition, these agreements typically restrict the ability of our collaborators, advisors, employees and consultants to publish data potentially relating to our trade secrets. Our academic collaborators typically have rights to publish data, provided that we are notified in advance and may delay publication for a specified time in order to secure our intellectual property rights arising from the collaboration. In other cases, publication rights are controlled exclusively by us, although in some cases we may share these rights with other parties. We also conduct joint research and development programs that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of these agreements, independent development or publication of information including our trade secrets in cases where we do not have proprietary or otherwise protected rights at the time of publication. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

Risks related to our financial condition and capital requirements

**** We have incurred significant losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future.***

We are a clinical-stage biotechnology company, and we have not yet generated significant revenues. We have incurred net losses in each year since our inception in 1992, including net losses of $48.7 million and $25.3 million for the years ended December 31, 2014 and 2013, respectively. As of September 30, 2015, we had an accumulated deficit of $266.9 million.

We have devoted most of our financial resources to research and development, including our clinical and preclinical development activities. To date, we have financed our operations primarily through the sale of equity securities and, to a lesser extent, through collaboration agreements and grants from governmental agencies and charitable foundations. The amount of our future net losses will depend, in part, on the rate of our future expenditures and our ability to obtain funding through equity or debt financings, strategic collaborations or additional grants. We have not completed pivotal clinical studies for any product candidate and it will be several years, if ever, before we have a product candidate ready for commercialization. Even if we obtain regulatory approval to market a product candidate, our future revenues will depend upon the size of any markets in which our product candidates have received approval, and our ability to achieve sufficient market acceptance, reimbursement from third-party payors and adequate market share for our product candidates in those markets.

We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. We anticipate that our expenses will increase substantially if and as we:

- continue our research and preclinical and clinical development of our product candidates;
- expand the scope of our current clinical studies for our product candidates;
- initiate additional preclinical, clinical or other studies for our oncology product candidates;
- further develop the manufacturing process for our vectors or our product candidates;
- change or add additional manufacturers or suppliers;
- seek regulatory and marketing approvals for our product candidates that successfully complete clinical studies;
- seek to identify and validate additional product candidates;
- acquire or in-license other product candidates and technologies;
- make milestone or other payments under any license agreements or our stock purchase agreement with the former equityholders of Pregenen;
- maintain, protect and expand our intellectual property portfolio;
- establish a sales, marketing and distribution infrastructure to commercialize any products for which we may obtain marketing approval;
- attract and retain skilled personnel;
- build additional infrastructure to support our operations as a public company and our product development and planned future commercialization efforts; and
- experience any delays or encounter issues with any of the above.

The net losses we incur may fluctuate significantly from quarter to quarter and year to year, such that a period-to-period comparison of our results of operations may not be a good indication of our future performance. In any particular quarter or quarters, our operating results could be below the expectations of securities analysts or investors, which could cause our stock price to decline.

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

Our ability to generate revenue and achieve profitability depends on our ability, alone or with strategic collaboration partners, to successfully complete the development of, and obtain the regulatory, pricing and reimbursement approvals necessary to commercialize our product candidates. We do not anticipate generating revenues from product sales for the foreseeable future, if ever. Our ability to generate future revenues from product sales depends heavily on our success in:

- completing research and preclinical and clinical development of our product candidates;
- seeking and obtaining regulatory and marketing approvals for product candidates for which we complete clinical studies;
- developing a sustainable, commercial-scale, reproducible, and transferable manufacturing process for our vectors and product candidates;
- establishing and maintaining supply and manufacturing relationships with third parties that can provide adequate (in amount and quality) products and services to support clinical development and the market demand for our product candidates, if approved;
- launching and commercializing product candidates for which we obtain regulatory and marketing approval, either by collaborating with a partner or, if launched independently, by establishing a sales force, marketing and distribution infrastructure;
- obtaining sufficient pricing and reimbursement for our product candidates from third-party and governmental payors;
- obtaining market acceptance of our product candidates and gene therapy as a viable treatment option;
- addressing any competing technological and market developments;
- identifying and validating new gene therapy product candidates;
- negotiating favorable terms in any collaboration, licensing or other arrangements into which we may enter; and
- maintaining, protecting and expanding our portfolio of intellectual property rights, including patents, trade secrets and know-how.

Even if one or more of the product candidates that we develop is approved for commercial sale, we anticipate incurring significant costs associated with commercializing any approved product candidate. Our expenses could increase beyond expectations if we are required by the U.S. Food and Drug Administration, or the FDA, the European Medicines Agency, or the EMA, or other regulatory agencies, domestic or foreign, 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.

****From time to time, we will need to raise additional funding, which may not be available on acceptable terms, or at all. Failure to obtain this necessary capital when needed may force us to delay, limit or terminate our product development efforts or other operations.***

We are currently advancing our Lenti-D and LentiGlobin product candidates through clinical development and other product candidates through preclinical development. Developing gene therapy products is expensive, and we expect our research and development expenses to increase substantially in connection with our ongoing activities, particularly as we advance our product candidates in clinical studies.

As of September 30, 2015, our cash, cash equivalents and marketable securities were $901.7 million. We expect that our existing cash, cash equivalents, and marketable securities will be sufficient to fund our current operations through 2018. However, our operating plan may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements or a combination of these approaches. In any event, we will require additional capital to obtain regulatory approval for, and to commercialize, our product candidates. Even if we believe we have sufficient funds for our current or future operating plans, we may seek additional capital if market conditions are favorable or if we have specific strategic objectives.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. Moreover, the terms of any financing may adversely affect the holdings or the rights of our stockholders and the issuance of additional securities, whether equity or debt, by us, or the possibility of such

issuance, may cause the market price of our shares to decline. The sale of additional equity or convertible securities would dilute all of our stockholders. The incurrence of indebtedness would result in increased fixed payment obligations and we may be required to agree to certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborative partners or otherwise at an earlier stage than otherwise would be desirable and we may be required to relinquish rights to some of our technologies or product candidates or otherwise agree to terms unfavorable to us, any of which may have a material adverse effect on our business, operating results and prospects.

If we are unable to obtain funding on a timely basis, we may be required to significantly curtail, delay or discontinue one or more of our research or development programs or the commercialization of any product candidates or be unable to expand our operations or otherwise capitalize on our business opportunities, as desired, which could materially affect our business, financial condition and results of operations.

Risks related to commercialization of our product candidates

We intend to rely on third-party manufacturers to produce our vector, product candidates and other key materials, but we have not entered into binding agreements with any such manufacturers to support commercialization. Additionally, these manufacturers do not have experience producing our vectors and product candidates at commercial levels and may not achieve the necessary regulatory approvals or produce our vectors and products at the quality, quantities, locations and timing needed to support commercialization.

We have not yet secured manufacturing capabilities for commercial quantities of our viral vectors or established transduction facilities in the desired commercialization regions to support commercialization of our products. Although we intend to rely on third-party manufacturers for commercialization, we have only entered into agreements with such manufacturers to support our clinical studies. We may be unable to negotiate binding agreements with the manufacturers to support our commercialization activities at commercially reasonable terms.

No manufacturer currently has the experience or ability to produce our vectors and product candidates at commercial levels. We are currently developing a commercial-scale manufacturing process for LentiGlobin and Lenti-D, which we are beginning to transfer to one or more contract manufacturers. We may run into technical or scientific issues related to manufacturing or development that we may be unable to resolve in a timely manner or with available funds. Although we have been able to produce our Lenti-D vector at commercial scale, we have not completed the characterization and validation activities necessary for commercial and regulatory approvals. If our manufacturing partners do not obtain such regulatory approvals, our commercialization efforts will be harmed.

Additionally, since the HSCs have a limited window of stability following procurement from the subject, we must set up transduction facilities in the regions where we wish to commercialize our product. Currently, we rely on third-party contract manufacturers in the United States and Europe to produce our product candidates for our clinical studies. Since a portion of our target patient populations will be outside the United States and Europe, we will need to set up additional transduction facilities that can replicate our transduction process. Establishment of such facilities may be financially impractical or impeded by technical, quality, or regulatory issues related to these new sites and we may also run into technical or scientific issues related to transfer of our transduction process or other developmental issues that we may be unable to resolve in a timely manner or with available funds.

Even if we timely develop a manufacturing process and successfully transfer it to the third-party vector and product manufacturers, if such third-party manufacturers are unable to produce the necessary quantities of viral vectors and our product candidates, or in compliance with GMP or other pertinent regulatory requirements, and within our planned time frame and cost parameters, the development and sales of our products, if approved, may be materially harmed.

In addition, any significant disruption in our supplier relationships could harm our business. We source key materials from third parties, either directly through agreements with suppliers or indirectly through our manufacturers who have agreements with suppliers. There are a small number of suppliers for certain key materials that are used to manufacture our product candidates. Such suppliers may not sell these key materials to our manufacturers at the times we need them or on commercially reasonable terms. We do not have any control over the process or timing of the acquisition of these key materials by our manufacturers. Moreover, we currently do not have any agreements for the commercial production of these key materials.

If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to market and sell our product candidates, we may be unable to generate any revenues.

We have no experience selling and marketing our product candidates. To successfully commercialize any products that may result from our development programs, we will need to develop these capabilities, either on our own or with others. We may enter into

collaborations with other entities to utilize their mature marketing and distribution capabilities, but we may be unable to enter into marketing agreements on favorable terms, if at all. If our future collaborative partners do not commit sufficient resources to commercialize our future products, if any, and we are unable to develop the necessary marketing capabilities on our own, we will be unable to generate sufficient product revenue to sustain our business. We will be competing with many companies that currently have extensive and well-funded marketing and sales operations. Without an internal team or the support of a third party to perform marketing and sales functions, we may be unable to compete successfully against these more established companies.

We face intense competition and rapid technological change and the possibility that our competitors may develop therapies that are more advanced or effective than ours, which may adversely affect our financial condition and our ability to successfully commercialize our product candidates.

We are engaged in gene therapy and in the field of CAR T cells in oncology, both of which are competitive and rapidly changing fields. We have competitors both in the United States and internationally, including major multinational pharmaceutical companies, biotechnology companies and universities and other research institutions. Some of the pharmaceutical and biotechnology companies we expect to compete with include GlaxoSmithKline plc through their collaboration with TIGET/MolMed, Sangamo BioSciences Inc. through their collaboration with Biogen Idec, Merck & Co., Inc., Novartis AG through their collaboration with the University of Pennsylvania, GlycoMimetics Inc., Acceleron Pharma, Inc., Kite Pharma, Inc., Pfizer Inc. through their collaboration with Cellectis SA, Adaptimmune Inc. and Juno Therapeutics, Inc. through their collaboration with Celgene Corporation. In addition, many universities and private and public research institutes are active in our target disease areas.

Many of our competitors have substantially greater financial, technical and other resources, such as larger research and development staff and experienced marketing and manufacturing organizations. Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries. Our competitors may succeed in developing, acquiring or licensing on an exclusive basis, products that are more effective or less costly than any product candidate that we may develop, or achieve earlier patent protection, regulatory approval, product commercialization and market penetration than us. Additionally, technologies developed by our competitors may render our potential product candidates uneconomical or obsolete, and we may not be successful in marketing our product candidates against competitors.

Even if we are successful in achieving regulatory approval to commercialize a product candidate faster than our competitors, we may face competition from biosimilars due to the changing regulatory environment. In the United States, the Biologics Price Competition and Innovation Act of 2009 created an abbreviated approval pathway for biological products that are demonstrated to be "highly similar," or biosimilar, to or "interchangeable" with an FDA-approved biological product. This pathway could allow competitors to reference data from biological products already approved after 12 years from the time of approval. In Europe, the European Commission has granted marketing authorizations for several biosimilars pursuant to a set of general and product class-specific guidelines for biosimilar approvals issued over the past few years. In Europe, a competitor may reference data from biological products already approved, but will not be able to get on the market until 10 years after the time of approval. This 10-year period will be extended to 11 years if, during the first eight of those 10 years, the marketing authorization holder obtains an approval for one or more new therapeutic indications that bring significant clinical benefits compared with existing therapies. In addition, companies may be developing biosimilars in other countries that could compete with our products. If competitors are able to obtain marketing approval for biosimilars referencing our products, our products may become subject to competition from such biosimilars, with the attendant competitive pressure and consequences. Expiration or successful challenge of our applicable patent rights could also trigger competition from other products, assuming any relevant exclusivity period has expired.

In addition, although our product candidates have been granted orphan drug status by the FDA and EMA, there are limitations to the exclusivity. In the United States, the exclusivity period for orphan drugs is seven years, while pediatric exclusivity adds six months to any existing patents or exclusivity periods. In Europe, orphan drugs may be able to obtain 10 years of marketing exclusivity and up to an additional two years on the basis of qualifying pediatric studies. However, orphan exclusivity may be reduced to six years if the drug no longer satisfies the original designation criteria. Additionally, a marketing authorization holder may lose its orphan exclusivity if it consents to a second orphan drug application or cannot supply enough drug. Orphan drug exclusivity also can be lost when a second applicant demonstrates its drug is "clinically superior" to the original orphan drug.

Finally, 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.

The commercial success of any current or future product candidate will depend upon the degree of market acceptance by physicians, patients, third-party payors and others in the medical community.

Ethical, social and legal concerns about gene therapy and genetic research could result in additional regulations restricting or prohibiting the products and processes we may use. Even with the requisite approvals, the commercial success of our product candidates will depend in part on the medical community, patients, and third-party or governmental payors accepting gene therapy products in general, and our product candidates in particular, as medically useful, cost-effective, and safe. Any product that we bring to the market may not gain market acceptance by physicians, patients, third-party payors and others in the medical community. If these products do not achieve an adequate level of acceptance, we may not generate significant product revenue and may not become profitable. The degree of market acceptance of these product candidates, if approved for commercial sale, will depend on a number of factors, including:

- the potential efficacy and potential advantages over alternative treatments;
- the prevalence and severity of any side effects, including any limitations or warnings contained in a product's approved labeling;
- the prevalence and severity of any side effects resulting from the chemotherapy and myeloablative treatments associated with the procedure by which our product candidates are administered;
- relative convenience and ease of administration;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the strength of marketing and distribution support and timing of market introduction of competitive products;
- the pricing of our products;
- publicity concerning our products or competing products and treatments; and
- sufficient third-party insurance coverage or reimbursement.

Even if a potential product displays a favorable efficacy and safety profile in preclinical and clinical studies, market acceptance of the product will not be known until after it is launched. Our efforts to educate the medical community and third-party payors on the benefits of the product candidates may require significant resources and may never be successful. Such efforts to educate the marketplace may require more resources than are required by the conventional technologies marketed by our competitors.

If we obtain approval to commercialize our product candidates outside of the United States, a variety of risks associated with international operations could materially adversely affect our business.

If any of our product candidates are approved for commercialization, we may enter into agreements with third parties to market them on a worldwide basis or in more limited geographical regions. We expect that we will be subject to additional risks related to entering into international business relationships, including:

- different regulatory requirements for approval of drugs and biologics in foreign countries;
- reduced protection for intellectual property rights;
- economic weakness, including inflation, or political instability in particular foreign economies and markets; and
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenues, and other obligations incident to doing business in another country.

The insurance coverage and reimbursement status of newly-approved products is uncertain. Failure to obtain or maintain adequate coverage and reimbursement for new or current products could limit our ability to market those products and decrease our ability to generate revenue.

The availability and extent of reimbursement by governmental and private payors is essential for most patients to be able to afford expensive treatments, such as stem cell transplants or gene therapy. Sales of our product candidates will depend substantially, both domestically and abroad, on the extent to which the costs of our product candidates will be paid by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or reimbursed by government health administration authorities, private health coverage insurers and other third-party payors. If reimbursement is not available, or is available only to limited levels, we may not be able to successfully commercialize our product candidates. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain pricing sufficient to realize a sufficient return on our investment.

There is significant uncertainty related to the insurance coverage and reimbursement of newly approved products, including gene therapies. In the United States, the principal decisions about reimbursement for new medicines are typically made by the Centers for Medicare & Medicaid Services, or CMS, an agency within the U.S. Department of Health and Human Services, as CMS decides whether and to what extent a new medicine will be covered and reimbursed under Medicare. Private payors tend to follow CMS to a substantial degree. It is difficult to predict what CMS will decide with respect to reimbursement for fundamentally novel products such as ours, as there is no body of established practices and precedents for these new products. Reimbursement agencies in Europe may be more conservative than CMS. For example, a number of cancer drugs have been approved for reimbursement in the United States and have not been approved for reimbursement in certain European countries. In addition, costs or difficulties associated with the reimbursement of Glybera could create an adverse environment for reimbursement of other gene therapies.

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

Moreover, increasing efforts by governmental and third-party payors, in the United States and abroad, to cap or reduce healthcare costs may cause such organizations to limit both coverage and level of reimbursement for new products approved and, as a result, they may not cover or provide adequate payment for our product candidates. We expect to experience pricing pressures in connection with the sale of any of our product candidates, due to the trend toward managed healthcare, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and surgical procedures and other treatments, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products.

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

Our target patient populations are relatively small, as a result, the pricing and reimbursement of our product candidates, if approved, must be adequate to support commercial infrastructure. If we are unable to obtain adequate levels of reimbursement, our ability to successfully market and sell our product candidates will be adversely affected. The manner and level at which reimbursement is provided for services related to our product candidates (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.

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

We focus our research and product development on treatments for severe genetic and rare 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 our product candidates, 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, may not be otherwise amenable to treatment with our products, or new patients may become increasingly difficult to identify or gain access to, all of which would adversely affect our results of operations and our business.

Risks related to our business operations

If we undertake business combinations, collaborations or similar strategic transactions, they may disrupt our business, divert management's attention, dilute stockholder value or be difficult to integrate.

On a regular basis, we consider various business combination transactions, collaborations, license agreements and strategic transactions with third parties, including transactions which may result in us acquiring, or being acquired by, a third party. The consummation or performance of any future business combination, collaboration or strategic transaction may involve risks, such as:

- diversion of managerial resources from day-to-day operations;
- challenges associated with integrating acquired technologies and operations of acquired companies;
- exposure to unforeseen liabilities;
- difficulties in the assimilation of different cultures and practices, as well as in the assimilation and retention of broad and geographically dispersed personnel and operations;
- misjudgment with respect to value, return on investment or strategic fit;
- higher than expected transaction costs; and
- additional dilution to our existing stockholders if we issue equity securities as consideration for any acquisitions.

As a result of these risks, we may not be able to achieve the expected benefits of any such transaction. If we are unsuccessful in completing or integrating any acquisition, we may be required to reevaluate that component of our strategy only after we have incurred substantial expenses and devoted significant management time and resources in seeking to complete and integrate the acquisition.

Future business combinations could involve the acquisition of significant intangible assets. We may need to record write-downs from future impairments of identified intangible assets and goodwill. These accounting charges would increase a reported loss or reduce any future reported earnings. In addition, we could use substantial portions of our available cash to pay the purchase price for company or product candidate acquisitions. Subject to the limitations under our existing indebtedness, it is possible that we could incur additional debt or issue additional equity securities as consideration for these acquisitions, which could cause our stockholders to suffer significant dilution.

The failure to successfully integrate Precision Genome Engineering, Inc.'s business and operations or fully realize the benefits of this acquisition may adversely affect our future results.

On June 30, 2014, we acquired all of the outstanding capital stock of Precision Genome Engineering, Inc., or Pregenen. Based in Seattle, Washington, Pregenen is focused on the development of gene editing and cell signaling technologies. The success of our acquisition of Pregenen will depend, in part, on our ability to successfully integrate Pregenen's business and operations and fully realize the anticipated benefits and synergies from combining our business with Pregenen's business, in particular our ability to advance Pregenen's gene editing and cell signaling technologies to the stage where they can be incorporated into our existing or new product candidates. However, to realize these anticipated benefits, we must successfully combine these businesses and continue the research and development activities previously undertaken by Pregenen as a stand-alone company. If we are unable to achieve these objectives, the anticipated benefits of our acquisition of Pregenen may not be realized fully or at all or may take longer to realize than expected. Any failure to timely realize these anticipated benefits could have a material adverse effect on our development programs, expenses and operating results.

Negative public opinion and increased regulatory scrutiny of gene therapy and genetic research may damage public perception of our product candidates or adversely affect our ability to conduct our business or obtain regulatory approvals for our product candidates.

Public perception may be influenced by claims that gene therapy is unsafe, and gene therapy may not gain the acceptance of the public or the medical community. In particular, our success will depend upon physicians specializing in the treatment of those diseases that our product candidates target prescribing treatments that involve the use of our product candidates in lieu of, or in addition to, existing treatments they are already familiar with and for which greater clinical data may be available. More restrictive government regulations or negative public opinion would have a negative effect on our business or financial condition and may delay or impair the development and commercialization of our product candidates or demand for any products we may develop. For example, in 2003, 20 subjects treated for X-linked severe combined immunodeficiency in two gene therapy studies using a murine gamma-retroviral vector showed correction of the disease, but the studies were terminated after five subjects developed leukemia (four of whom were

subsequently cured). Although none of our current product candidates utilize these gamma-retroviruses, our product candidates use a viral delivery system. Adverse events in our clinical studies, even if not ultimately attributable to our product candidates (such as the many adverse events that typically arise from the transplant process) and the resulting publicity could result in increased governmental regulation, unfavorable public perception, potential regulatory delays in the testing or approval of our potential product candidates, stricter labeling requirements for those product candidates that are approved and a decrease in demand for any such product candidates.

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

We are highly dependent on principal members of our executive team and key employees, the loss of whose services may adversely impact the achievement of our objectives. While we have entered into employment agreements with each of our executive officers, any of them could leave our employment at any time, as all of our employees are "at will" employees. Recruiting and retaining other qualified employees, consultants and advisors for our business, including scientific and technical personnel, will also be critical to our success. There is currently a shortage of skilled executives in our industry, which is likely to continue. As a result, competition for skilled personnel is intense and the turnover rate can be high. We may not be able to attract and retain personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for individuals with similar skill sets. In addition, failure to succeed in preclinical or clinical studies may make it more challenging to recruit and retain qualified personnel. The inability to recruit or loss of the services of any executive, key employee, consultant or advisor may impede the progress of our research, development and commercialization objectives.

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

As of September 30, 2015, we had 207 full-time employees. As our business, research and development activities expand, we expect to expand our full-time employee base and to hire more consultants and contractors. Our management may need to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing these growth activities. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Our expected growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of additional product candidates. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and/or grow revenues could be reduced, and we may not be able to implement our business strategy.

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, principal investigators, consultants and commercial partners. Misconduct by these parties could include intentional failures to comply with the regulations of the FDA and non-U.S. regulators, provide accurate information to the FDA and non-U.S. regulators, 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 may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Such misconduct could also involve the improper use of information obtained in the course of clinical studies, which could result in regulatory sanctions and cause serious harm to our reputation or could cause regulatory agencies not to approve our product candidates. 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 governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant fines or other sanctions.

We face potential product liability, and, if successful claims are brought against us, we may incur substantial liability and costs. If the use of our product candidates harms patients, or is perceived to harm patients even when such harm is unrelated to our product candidates, our regulatory approvals could be revoked or otherwise negatively impacted and we could be subject to costly and damaging product liability claims.

The use of our product candidates in clinical studies and the sale of any products for which we obtain marketing approval exposes us to the risk of product liability claims. Product liability claims might be brought against us by subjects participating in clinical trials, consumers, healthcare providers, pharmaceutical companies or others selling or otherwise coming into contact with our products. There is a risk that our product candidates may induce adverse events. If we cannot successfully defend against product liability claims, we could incur substantial liability and costs. In addition, regardless of merit or eventual outcome, product liability claims may result in:

- impairment of our business reputation;
- withdrawal of clinical study participants;
- costs due to related litigation;
- distraction of management's attention from our primary business;
- substantial monetary awards to patients or other claimants;
- the inability to commercialize our product candidates; and
- decreased demand for our product candidates, if approved for commercial sale.

We carry product liability insurance and we believe our product liability insurance coverage is sufficient in light of our current clinical programs; however, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. If and when we obtain marketing approval for product candidates, we intend to expand our insurance coverage to include the sale of commercial products; however, we may be unable to obtain product liability insurance on commercially reasonable terms or in adequate amounts. On occasion, large judgments have been awarded in class action lawsuits based on drugs or medical treatments that had unanticipated adverse effects. A successful product liability claim or series of claims brought against us could cause our stock price to decline and, if judgments exceed our insurance coverage, could adversely affect our results of operations and business.

Patients with the diseases targeted by our product candidates are often already in severe and advanced stages of disease and have both known and unknown significant pre-existing and potentially life-threatening health risks. During the course of treatment, patients may suffer adverse events, including death, for reasons that may be related to our product candidates. Such events could subject us to costly litigation, require us to pay substantial amounts of money to injured patients, delay, negatively impact or end our opportunity to receive or maintain regulatory approval to market our products, or require us to suspend or abandon our commercialization efforts. Even in a circumstance in which we do not believe that an adverse event is related to our products, the investigation into the circumstance may be time-consuming or inconclusive. These investigations may interrupt our sales efforts, delay our regulatory approval process in other countries, or impact and limit the type of regulatory approvals our product candidates receive or maintain. As a result of these factors, a product liability claim, even if successfully defended, could have a material adverse effect on our business, financial condition or results of operations.

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

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

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials or other work-related injuries, this insurance may not provide adequate coverage against potential liabilities. In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research,

development or production efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

We may not be successful in our efforts to identify or discover additional product candidates.

The success of our business depends primarily upon our ability to identify, develop and commercialize products based on our gene therapy and gene editing platforms. Although our Lenti-D and LentiGlobin product candidates are currently in clinical development, our research programs, including our oncology research programs, may fail to identify other 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 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 and could potentially cause us to cease operations. 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.

We may use our financial and human resources to pursue a particular research program or product candidate and fail to capitalize on programs or product candidates that may be more profitable or for which there is a greater likelihood of success.

Because we have limited resources, we may forego or delay pursuit of opportunities with certain programs or product candidates or for indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs for product candidates may not yield any commercially viable products. 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 strategic 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, or we may allocate internal resources to a product candidate in a therapeutic area in which it would have been more advantageous to enter into a partnering arrangement.

We incur significant increased costs as a result of operating as a public company, and our management devotes substantial time to new compliance initiatives.

As a public company, we have incurred and will continue to incur significant legal, accounting and other expenses. In addition, the Sarbanes-Oxley Act, as well as rules subsequently implemented by the SEC, and The NASDAQ Global Select Market have imposed various requirements on public companies. In July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, was enacted, resulting in significant corporate governance and executive compensation-related regulations. Stockholder activism, the current political environment and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain our current levels of such coverage.

Risks related to our intellectual property

If we are unable to obtain or protect intellectual property rights related to our product candidates, we may not be able to compete effectively in our markets.

We rely upon a combination of patents, trade secret protection and confidentiality agreements to protect the intellectual property related to our product candidates. The strength of patents in the biotechnology and pharmaceutical field involves complex legal and scientific questions and can be uncertain. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our product candidates in the United States or in other foreign countries. There is no assurance that all of the potentially relevant prior art relating to our patents and patent applications has been found, which can invalidate a patent or prevent a patent from issuing from a pending patent application. Even if patents do successfully issue and even if such patents cover our product candidates, third parties may challenge their validity, enforceability or scope, which may result in such patents being narrowed or invalidated. Furthermore, even if they are unchallenged, our patents and patent applications may not adequately protect our intellectual property, provide exclusivity for our product candidates or prevent others from designing around our claims. Any of these outcomes could impair our ability to prevent competition from third parties, which may have an adverse impact on our business.

If the patent applications we hold or have in-licensed with respect to our programs or product candidates fail to issue, if their breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for our product candidates, it could dissuade companies from collaborating with us to develop product candidates, and threaten our ability to commercialize, future products. Several patent applications covering our product candidates have been filed recently. We cannot offer any assurances about which, if any, patents will issue, the breadth of any such patent or whether any issued patents will be found invalid and unenforceable or will be threatened by third parties. Any successful opposition to these patents or any other patents owned by or licensed to us could deprive us of rights necessary for the successful commercialization of any product candidates that we may develop. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a product candidate under patent protection could be reduced. Since patent applications in the United States and most other countries are confidential for a period of time after filing, and some remain so until issued, we cannot be certain that we were the first to file any patent application related to a product candidate. Furthermore, if third parties have filed such patent applications, an interference proceeding in the United States can be initiated by a third party to determine who was the first to invent any of the subject matter covered by the patent claims of our applications. In addition, patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after it is filed. Various extensions may be available however the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired for a product, we may be open to competition from generic medications.

In addition to the protection afforded by patents, we rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce and any other elements of our product candidate discovery and development processes that involve proprietary know-how, information or technology that is not covered by patents. However, trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, scientific advisors and contractors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors.

Although we expect all of our employees and consultants to assign their inventions to us, and all of our employees, consultants, advisors and any third parties who have access to our proprietary know-how, information or technology to enter into confidentiality agreements, we cannot provide any assurances that all such agreements have been duly executed or that our trade secrets and other confidential proprietary information will not be disclosed or that competitors will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Misappropriation or unauthorized disclosure of our trade secrets could impair our competitive position and may have a material adverse effect on our business. Additionally, if the steps taken to maintain our trade secrets are deemed inadequate, we may have insufficient recourse against third parties for misappropriating the trade secret. In addition, others may independently discover our trade secrets and proprietary information. For example, the FDA, as part of its Transparency Initiative, is currently considering whether to make additional information publicly available on a routine basis, including information that we may consider to be trade secrets or other proprietary information, and it is not clear at the present time how the FDA's disclosure policies may change in the future, if at all.

Further, the laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. If we are unable to prevent material disclosure of the non-patented intellectual property related to our technologies to third parties, and there is no guarantee that we will have any such enforceable trade secret protection, we may not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, results of operations and financial condition.

Third-party claims of intellectual property infringement may prevent or delay our development and commercialization efforts.

Our commercial success depends in part on our avoiding infringement of the patents and proprietary rights of third parties. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions and *inter partes* reexamination proceedings before the U.S. Patent and Trademark Office, or U.S. PTO, and corresponding foreign patent offices. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are pursuing development candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties.

Third parties may assert that we are employing their proprietary technology without authorization. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates. Because patent applications can take many years to issue, there may be currently

pending patent applications which may later result in issued patents that our product candidates may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. If any third-party patents were held by a court of competent jurisdiction to cover the manufacturing process of any of our product candidates, any molecules formed during the manufacturing process or any final product itself, the holders of any such patents may be able to block our ability to commercialize such product candidate unless we obtained a license under the applicable patents, or until such patents expire. Similarly, if any third-party patents were held by a court of competent jurisdiction to cover aspects of our formulations, processes for manufacture or methods of use, including combination therapy, the holders of any such patents may be able to block our ability to develop and commercialize the applicable product candidate unless we obtained a license or until such patent expires. In either case, such a license may not be available on commercially reasonable terms or at all.

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

We may not be successful in obtaining or maintaining necessary rights to gene therapy product components and processes for our development pipeline through acquisitions and in-licenses.

Presently we have rights to the intellectual property, through licenses from third parties and under patents that we own, to develop our gene therapy product candidates. Because our programs may involve additional product candidates that may require the use of proprietary rights held by third parties, the growth of our business will likely depend in part on our ability to acquire, in-license or use these proprietary rights. In addition, our product candidates may require specific formulations to work effectively and efficiently and these rights may be held by others. We may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies are also pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These established companies may have a competitive advantage over us due to their size, cash resources and greater clinical development and commercialization capabilities.

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

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. If we are unable to successfully obtain rights to required third-party intellectual property rights, our business, financial condition and prospects for growth could suffer.

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 are a party to a number of intellectual property license agreements that are important to our business and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that future license agreements will impose, various diligence, milestone payment, royalty and other obligations on us. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, the licensor may have the right to terminate the license, in which event we would not be able to market products covered by the license.

We may need to obtain licenses from third parties to advance our research or allow commercialization of our product candidates, and we have done so from time to time. We may fail to obtain any of these 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 develop or license replacement technology. If we are unable to do so, we may be unable to develop or commercialize the affected product candidates, which could harm our business significantly. We cannot provide any assurances that third-party patents do not exist which might be enforced against our current product candidates or future products, resulting in either an injunction prohibiting our sales, or, with respect to our sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties.

In many cases, patent prosecution of our licensed technology is controlled solely by the licensor. If our licensors fail to obtain and maintain patent or other protection for the proprietary intellectual property we license from them, we could lose our rights to the intellectual property or our exclusivity with respect to those rights, and our competitors could market competing products using the intellectual property. In certain cases, we control the prosecution of patents resulting from licensed technology. In the event we breach any of our obligations related to such prosecution, we may incur significant liability to our licensing partners. Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues and is complicated by the rapid pace of scientific discovery in our industry. 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 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.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates.

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

Competitors may infringe our patents or the patents of our licensors. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours or our licensors is not valid, is unenforceable and/or is not infringed, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing.

Interference proceedings provoked by third parties or brought by us may be necessary to determine the priority of inventions with respect to our patents or patent applications or those of our licensors. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms. Our defense of litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. We may not be able to prevent, alone or with our licensors, misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

Patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

On September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law, including provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. The U.S. PTO is currently developing regulations and procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first to file provisions, were enacted March 16, 2013. However, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. However, the Leahy-Smith 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 and financial condition.

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

We employ individuals who 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 independent contractors 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 our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of any of our employee's former employer or other third parties. 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, which could adversely impact our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

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

We may also be subject to claims that former employees, collaborators or other third parties have an ownership interest in our patents or other intellectual property. We have had in the past, and we may also have to in the future, ownership disputes arising, for example, from conflicting obligations of consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

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

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the U.S. PTO and various governmental patent agencies outside of the United States in several stages over the lifetime of the patents and/or applications. We have systems in place to remind us to pay these fees, and we employ an outside firm and rely on our outside counsel to pay these fees due to non-U.S. patent agencies. The U.S. PTO and various non-U.S. governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors might be able to enter the market and this circumstance would have a material adverse effect on our business.

Issued patents covering our product candidates could be found invalid or unenforceable if challenged in court.

If we or one of our licensing partners initiated legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that the patent covering our product candidate is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, 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 U.S. PTO, or made a misleading statement, during prosecution. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, post grant review, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover our product candidates. 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 and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our product candidates. Such a loss of patent protection would have a material adverse impact on our business.

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

As is the case with other biotechnology companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biotechnology industry involve both technological and legal complexity, and is therefore

obtaining and enforcing biotechnology patents is costly, time-consuming and inherently uncertain. In addition, the United States has recently enacted and is currently implementing wide-ranging patent reform legislation. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the federal courts, and the U.S. PTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

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

Filing, prosecuting and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our 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 proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Risks related to ownership of our common stock

The market price of our common stock may be highly volatile, and you may not be able to resell your shares at or above the price at which you purchase them.

Companies trading in the stock market in general, and The NASDAQ Global Select Market in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance.

The market price of our common stock may be volatile. Our stock price could be subject to wide fluctuations in response to a variety of factors, including the following:

- adverse results or delays in preclinical or clinical studies;
- reports of adverse events in other gene therapy products or clinical studies of such products;
- inability to obtain additional funding;
- any delay in filing an IND or BLA for any of our product candidates and any adverse development or perceived adverse development with respect to the FDA's review of that IND or BLA;
- failure to develop successfully and commercialize our product candidates;
- failure to maintain our existing strategic collaborations or enter into new collaborations;
- failure by us or our licensors and strategic collaboration partners to prosecute, maintain or enforce our intellectual property rights;
- changes in laws or regulations applicable to future products;
- inability to obtain adequate product supply for our product candidates or the inability to do so at acceptable prices;

- adverse regulatory decisions;
- introduction of new products, services or technologies by our competitors;
- failure to meet or exceed financial projections we may provide to the public;
- failure to meet or exceed the financial projections of the investment community;
- the perception of the pharmaceutical industry by the public, legislatures, regulators and the investment community;
- announcements of significant acquisitions, strategic partnerships, joint ventures or capital commitments by us, our strategic collaboration partner or our competitors;
- disputes or other developments relating to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- additions or departures of key scientific or management personnel;
- significant lawsuits, including patent or stockholder litigation;
- changes in the market valuations of similar companies;
- sales of our common stock by us or our stockholders in the future; and
- trading volume of our common stock.

Actual or potential sales of our common stock by our employees, including our executive officers, pursuant to pre-arranged stock trading plans could cause our stock price to fall or prevent it from increasing for numerous reasons, and actual or potential sales by such persons could be viewed negatively by other investors.

In accordance with the guidelines specified under Rule 10b5-1 of the Securities Exchange Act of 1934, as amended, and our policies regarding stock transactions, a number of our employees, including executive officers, have adopted and may continue to adopt stock trading plans pursuant to which they have arranged to sell shares of our common stock from time to time in the future. Generally, sales under such plans by our executive officers and directors require public filings. Actual or potential sales of our common stock by such persons could cause the price of our common stock to fall or prevent it from increasing for numerous reasons.

Future sales and issuances of our common stock or rights to purchase common stock, including pursuant to our equity incentive plans, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.

Additional capital will be needed in the future to continue our planned operations. To the extent we raise additional capital by issuing equity securities, our stockholders may experience substantial dilution. We may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time. If we sell common stock, convertible securities or other equity securities in more than one transaction, investors may be materially diluted by subsequent sales. These sales may also result in material dilution to our existing stockholders, and new investors could gain rights superior to our existing stockholders.

Pursuant to our 2013 Stock Option and Incentive Plan, or the 2013 Plan, our management is authorized to grant stock options and other equity-based awards to our employees, directors and consultants. The number of shares available for future grant under the 2013 Plan automatically increases each year by up to 4% of all shares of our capital stock outstanding as of December 31 of the prior calendar year, subject to the ability of our board of directors or compensation committee to take action to reduce the size of the increase in any given year. Currently, we plan to register the increased number of shares available for issuance under the 2013 Plan each year. If our board of directors or compensation committee elects to increase the number of shares available for future grant by the maximum amount each year, our stockholders may experience additional dilution, which could cause our stock price to fall. We also have an Employee Stock Purchase Plan and any shares of common stock purchased pursuant to that plan will also cause dilution.

We could be subject to securities class action litigation.

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

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

Under Section 382 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an "ownership change," generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period, the corporation's ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research tax credits) to offset its post-change income may be limited. We have completed several financings since our inception which we believe have resulted in a change in control as defined by IRC Section 382. We may also experience ownership changes in the future as a result of subsequent shifts in our stock ownership. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss carryforwards to offset U.S. federal taxable income may be subject to limitations, which could potentially result in increased future tax liability to us. In addition, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed.

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

We have never declared or paid any cash dividends on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to stockholders will therefore be limited to the appreciation of their stock.

Provisions in our amended and restated certificate of incorporation and by-laws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us or increase the cost of acquiring us, even if doing so would benefit our stockholders or remove our current management.

Our amended and restated certificate of incorporation, amended and restated by-laws and Delaware law contain provisions that may have the effect of delaying or preventing a change in control of us or changes in our management. Our amended and restated certificate of incorporation and by-laws, include provisions that:

- authorize "blank check" preferred stock, which could be issued by our board of directors without stockholder approval and may contain voting, liquidation, dividend and other rights superior to our common stock;
- create a classified board of directors whose members serve staggered three-year terms;
- specify that special meetings of our stockholders can be called only by our board of directors, the chairperson of our board of directors, our chief executive officer or our president;
- prohibit stockholder action by written consent;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- provide that our directors may be removed only for cause;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- specify that no stockholder is permitted to cumulate votes at any election of directors;
- expressly authorize our board of directors to modify, alter or repeal our amended and restated by-laws; and
- require supermajority votes of the holders of our common stock to amend specified provisions of our amended and restated certificate of incorporation and amended and restated by-laws.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our management.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to merge or combine with us.

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

Item 5. Other Information

Our policy governing transactions in our securities by our directors, officers, and employees permits our officers, directors and certain other persons to enter into trading plans complying with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended. We have been advised that certain of our officers (including Nick Leschly, Chief Executive Officer, Jeffrey Walsh, Chief Operating Officer, David Davidson, Chief Medical Officer and Eric Sullivan, Senior Director, Finance and Principal Accounting Officer) and certain of our directors (including Daniel Lynch and James Mandell) have entered into trading plans covering periods after the date of this quarterly report on Form 10-Q in accordance with Rule 10b5-1 and our policy governing transactions in our securities. Generally, under these trading plans, the individual relinquishes control over the transactions once the trading plan is put into place. Accordingly, sales under these plans may occur at any time, including possibly before, simultaneously with, or immediately after significant events involving our company. We do not undertake to report Rule 10b5-1 trading plans that may be adopted by any officers or directors in the future, or to report any modifications or termination of any publicly announced trading plan, except to the extent required by law.

Item 6. Exhibits

The exhibits filed as part of this Quarterly Report on Form 10-Q are set forth on the Exhibit Index, which is incorporated herein by reference.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

bluebird bio, Inc.

Date: November 5, 2015

By: /s/ Nick Leschly
Nick Leschly
President, Chief Executive Officer and Director (Principal Executive Officer and Duly Authorized Officer)

Date: November 5, 2015

By: /s/ James M. DeTore
James M. DeTore
Chief Financial Officer and Treasurer (Principal Financial Officer and Duly Authorized Officer)

Exhibit Index

Exhibit Number	Exhibit Title	Incorporated by Reference			
		Form	File no.	Exhibit	Filing Date
2.1	Stock Purchase Agreement by and between the Registrant and Precision Genome Engineering, Inc.	8-K	001-35966	2.1	June 30, 2014
3.1	Amended and Restated Certificate of Incorporation of the Registrant	8-K	001-35966	3.1	June 24, 2013
3.2	Amended and Restated By-laws of the Registrant	8-K	001-35966	3.2	June 24, 2013
4.1	Specimen Common Stock Certificate	S-1/A	333-188605	4.1	June 4, 2013
4.2	Form of Series A-1 Preferred Stock Warrant	S-1/A	333-188605	4.3	May 14, 2013
4.3	Form of Series B Preferred Stock Warrant	S-1/A	333-188605	4.4	May 14, 2013
4.4	Amended and Restated Investors' Rights Agreement, dated as of July 23, 2012, by and among the Registrant and the Investors listed therein.	S-1/A	333-188605	4.5	May 14, 2013
4.5	Amendment to Amended and Restated Investors' Rights Agreement, dated as of July 8, 2014, by and among the Registrant and the Investors listed therein.	10-Q	001-35966	4.6	August 12, 2014
10.1	Second Amended and Restated 2002 Employee, Director and Consultant Plan, as amended, and forms of award agreement thereunder	S-1/A	333-188605	10.1	May 14, 2013
10.2	2010 Stock Option and Grant Plan, as amended, and forms of award agreement thereunder	S-1/A	333-188605	10.2	May 14, 2013
10.3	2013 Stock Option and Incentive Plan and forms of award agreement thereunder	S-1/A	333-188605	10.3	June 4, 2013
10.4	Form of Indemnification Agreement between the Registrant and each of its Executive Officers and Directors	S-1/A	333-188605	10.4	May 14, 2013
10.5	Amended and Restated Lease Agreement, dated May 18, 2007, by and between the Registrant and Rivertech Associates II, LLC, as amended	10-Q	001-35966	10.1	November 14, 2013
10.6†	Patent License Agreement, dated December 11, 1996, by and between the Registrant (formerly known as Genetix Pharmaceuticals Inc., successor-in-interest to Innogene Pharmaceuticals Inc.) and Massachusetts Institute of Technology, as amended	S-1/A	333-188605	10.6	May 14, 2013
10.7†	Patent and Know-How License Agreement No. 07554F30, dated May 14, 2009, by and between the Registrant (formerly known as Genetix Pharmaceuticals Inc.) and INSERM-TRANSFERT, as amended	S-1/A	333-188605	10.7	May 14, 2013
10.8†	License Agreement, dated September 13, 2011, by and between the Registrant and Institut Pasteur, as amended	S-1/A	333-188605	10.8	May 14, 2013
10.9†	Amendment No. 3 to License Agreement, dated September 10, 2013, by and between the Registrant and Institut Pasteur	10-Q	001-35966	10.2	November 14, 2013
10.10†	Amendment No. 4 to License Agreement, dated April 1, 2015, by and between the Registrant and Institut Pasteur	10-Q	001-35966	10.10	May 6, 2015
10.11†	License Agreement, dated December 7, 2011, by and between the Registrant and Research Development Foundation	S-1/A	333-188605	10.9	May 14, 2013
10.12†	Novation Agreement, dated April 2, 2012, by and between the Registrant and The Board of Trustees of the Leland Stanford Junior University	S-1/A	333-188605	10.10	May 14, 2013

Exhibit Number	Exhibit Title	Incorporated by Reference			
		Form	File no.	Exhibit	Filing Date
10.13†	Master Collaboration Agreement by and between the Registrant and Celgene Corporation, dated March 19, 2013	S-1/A	333-188605	10.11	May 14, 2013
10.14†	Amended and Restated Master Collaboration Agreement by and between the Registrant and Celgene Corporation, dated June 3, 2015	10-Q	001-35966	10.14	August 6, 2015
10.15	Amended and Restated Employment Agreement by and between the Registrant and Nick Leschly	S-1/A	333-188605	10.12	June 4, 2013
10.16	Amended and Restated Employment Agreement by and between the Registrant and Jeffrey T. Walsh	S-1/A	333-188605	10.13	June 4, 2013
10.17	Amended and Restated Employment Agreement by and between the Registrant and Mitch Finer	S-1/A	333-188605	10.14	June 4, 2013
10.18	Transitional Services and Separation Agreement by and between the Registrant and Mitch Finer	10-Q	001-35966	10.17	May 6, 2015
10.19	Amended and Restated Employment Agreement by and between the Registrant and David M. Davidson, M.D.	S-1/A	333-188605	10.15	June 4, 2013
10.20	Employment Agreement, dated October 20, 2014, by and between the Registrant and James DeTore	8-K	001-35966	10.1	November 10, 2014
10.21	Employment Agreement, dated May 30, 2015, by and between the Registrant and Philip D. Gregory	10-Q	001-35966	10.21	August 6, 2015
10.22	Employment Agreement, dated February 3, 2014, by and between the Registrant and Jason F. Cole	10-Q	001-35966	10.19	May 13, 2014
10.23	Offer Letter, dated October 14, 2013, by and between the Registrant and Eric Sullivan	10-Q	001-35966	10.20	May 13, 2014
10.24	2013 Employee Stock Purchase Plan	S-1/A	333-188605	10.17	June 4, 2013
10.25	Executive Cash Incentive Bonus Plan	S-1/A	333-188605	10.18	May 14, 2013
10.26	Lease, dated June 3, 2013, by and between the Registrant and 150 Second Street, LLC, as amended	S-1/A	333-188605	10.19	June 4, 2013
10.27	Lease Amendment, dated November 15, 2013, by and between the Registrant and 150 Second Street, LLC, as amended	10-K	001-35966	10.19	March 5, 2014
10.28	Lease Amendment, dated June 9, 2014, by and between the Registrant and 150 Second Street, LLC, as amended	10-Q	011-35966	10.24	August 12, 2014
10.29	Lease, dated June 29, 2015, by and between the Registrant and ARE-MA Region No. 38, LLC	10-Q	011-35966	10.29	August 6, 2015
10.30†	Lease, dated September 21, 2015, by and between the Registrant and ARE-MA Region No. 40 LLC	—	—	—	Filed herewith
21.1	Subsidiaries of the Registrant	10-Q	011-35966	21.1	August 12, 2014
31.1	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	—	—	—	Filed herewith
31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	—	—	—	Filed herewith
32.1	Certification of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	—	—	—	Filed herewith

Exhibit Number	Exhibit Title	Incorporated by Reference			
		Form	File no.	Exhibit	Filing Date
101	The following materials from the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2015, formatted in XBRL (eXtensible Business Reporting Language): (i) Condensed Consolidated Balance Sheets as of September 30, 2015 and December 31, 2014, (ii) Condensed Consolidated Statements of Operations and Comprehensive Loss for the three and nine months ended September 30, 2015 and 2014, (iii) Condensed Consolidated Statements of Cash Flows for the nine months ended September 30, 2015 and 2014 and (iv) Notes to Unaudited Condensed Consolidated Financial Statements.	—	—	—	Filed herewith

† Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment and this exhibit has been submitted separately to the SEC.

Exhibit 10.30

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT WERE OMITTED AND REPLACED WITH "[***]". A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECRETARY OF THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO AN APPLICATION REQUESTING CONFIDENTIAL TREATMENT PURSUANT TO RULE 24B-2 PROMULGATED UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

LEASE AGREEMENT

by and between

ARE-MA REGION NO. 40, LLC,

a Delaware limited liability company

and

BLUEBIRD BIO, INC.,

a Delaware corporation

LEASE AGREEMENT

This LEASE AGREEMENT (the "**Lease**") is made as of this _____ day of _____, 2015, between ARE-MA REGION NO. 40, LLC, a Delaware limited liability company ("**Landlord**"), and BLUEBIRD BIO, INC., a Delaware corporation ("**Tenant**").

BASIC LEASE PROVISIONS

Address: 60 Binney Street, Cambridge, Massachusetts

Premises: That portion of the Project containing approximately 253,108 rentable square feet, as shown on **Exhibit A.**

Project: The land ("**Land**") with the building ("**Building**") at 50 and 60 Binney Street, and the garage under the Building ("**Garage**"), to be constructed thereon in the City of Cambridge, Middlesex County, Commonwealth of Massachusetts, as described in **Exhibit B**. That portion of the Building having an address of 50 Binney Street is hereinafter referenced as the "**50 Binney Building**", and that portion of the Building having an address of 60 Binney Street is hereinafter referenced as the "**60 Binney Building**"; the 50 Binney Building and the 60 Binney Building are identified on the plan attached hereto as **Exhibit B-1**.

Campus: The Alexandria Center at Kendall Square, comprised of the real property shown on **Exhibit B-2**.

Base Rent: $72.50 per rentable square foot per year, adjusted as provided in Section 4, and if Tenant elects pursuant to Section 6.2 of the Work Letter to receive the Additional TI Allowance (as defined in the Work Letter) adjusted as provided in Section 4 below.

Rentable Area of Building:	530,477 rentable square feet
Rentable Area of Premises:	253,108 rentable square feet
Tenant's Share of Operating Expenses for the Project:	47.71% (except as set forth in Section 3 for the 2-month period following the Post Rent Credit Date (as defined below))

Tenant's Share of Operating Expenses for the Garage:	22.02% (198 spaces/899 spaces in Garage)
Tenant's Share of Campus Expenses:	18.21% (except as set forth in Section 3 for the 2-month period following the Post Rent Credit Date)
Tenant's Share of 60 Binney Building Expenses:	98.97% (except as set forth in Section 3 for the 2-month period following the Post Rent Credit Date)
Tenant's Share of Operating Expenses for the Premises:	100% (except as set forth in Section 3 for the 2-month period following the Post Rent Credit Date)

Security Deposit: $9,175,165.00 (i.e., six months of Base Rent) (the "**Initial Security Deposit Amount**"), increasing to $13,762,747.49 (i.e., nine months of Base Rent) (the "**Deferred Security Deposit Amount**") at the time that Tenant submits its first Requisition under Section 6.8 of the Work Letter, and thereafter subject to reduction by one month on each of the fourth, fifth and sixth anniversaries of the Post Rent Credit Date (as defined below), all subject to and as set forth in Section 6.

Delivery Date: As defined in Section 2.7(a) of the Work Letter.

Target Delivery Date: July 1, 2016.

Target Substantial Completion Date: January 1, 2017.

Rent Commencement Date: October 1, 2016, provided that Tenant shall receive a credit equal to monthly Base Rent for the period from the Rent Commencement Date until the Post Rent Credit Date.

Post Rent Credit Date:	If Tenant elects under Section 3.1 of the Work Letter to use the Construction Manager to construct the Tenant Improvements (a "**CM Build Election**"), the Post Rent Credit Date shall be the earlier of (w) and (x), where (w) is the later of (i) April 1, 2017, (ii) two hundred seventy-three (273) days after the Delivery Date and (iii) Substantial Completion of the Shell and Core Improvements (as defined in the Work Letter), and (x) is the date on which Tenant first occupies any portion of the Premises for the Permitted Uses. If Tenant elects under Section 3.1 of the Work Letter to use a general contractor for the Tenant Improvements other than the Construction Manager (a "**Non-CM Build Election**"), the Post Rent Credit Date shall be the earlier of (w) and (x), where (w) is the later of (i) April 1, 2017 and (ii) ninety-one (91) days after Substantial Completion of the Shell and Core Improvements, and (x) is the date on which Tenant first occupies any portion of the Premises for the Permitted Uses.
Base Rent Adjustment Percentage:	1.75%.
Base Term:	Beginning on the Delivery Date, and ending on the date which is one hundred twenty (120) months from the first day of the month following the month in which the Post Rent Credit Date occurs (or if the Post Rent Credit Date occurs on the first day of a month, from the first day of the month in which the Post Rent Credit Date occurs), subject to extension in accordance with Section 39 below.
Permitted Use:	Technical office use (which includes, as permitted uses and not accessory uses, research and development use, laboratory use and Tenant's office use), in accordance with Section 4.34(f) of the Cambridge Zoning Ordinance, consistent with the character of the Project and otherwise in compliance with the provisions of Section 7 hereof.

Work Letter: As set forth in **Exhibit C**.

Address for Rent Payment:

P.O. Box 975383
Dallas, TX 75397-5383

Landlord's Notice Address:

385 East Colorado Boulevard, Suite 299
Pasadena, CA 91101
Attention: Corporate Secretary
Re: 60 Binney Street, Cambridge, MA

Tenant's Notice Address:

Prior to Post Rent Credit Date:

bluebird bio, inc.
150 Second Street
First Floor
Cambridge, MA 02141
Attention: General Counsel

From and after Post Rent Credit Date:

At the Premises
Attention: General Counsel

The following Exhibits and Addenda are attached hereto and incorporated herein by this reference:

[ ]	EXHIBIT A	PREMISES DESCRIPTION
[ ]	EXHIBIT A-1	PRELIMINARY MEASUREMENTS
[ ]	EXHIBIT B	DESCRIPTION OF PROJECT
[ ]	EXHIBIT B-1	FLOOR PLANS SHOWING 50 BINNEY BUILDING AND 60 BINNEY BUILDING
[ ]	EXHIBIT B-2	DESCRIPTION OF CAMPUS
[ ]	EXHIBIT C	WORK LETTER (TENANT BUILD)
[ ]	EXHIBIT D	ACKNOWLEDGMENT OF DELIVERY AND COMMENCEMENT DATES
[ ]	EXHIBIT D-1	REPORTED PROJECT COSTS FORMAT
[ ]	EXHIBIT E	RULES AND REGULATIONS
[ ]	EXHIBIT F	TENANT'S PROPERTY
[ ]	EXHIBIT F-1	INITIAL LIST OF IMPROVEMENTS TO BE REMOVED
[ ]	EXHIBIT G	ESTOPPEL CERTIFICATE FORM
[ ]	EXHIBIT H	SNDA FORM
[ ]	EXHIBIT I	LIST OF ENVIRONMENTAL REPORTS

[remainder of page intentionally left blank]

1. **Lease of Premises.** Upon and subject to all of the terms and conditions hereof, Landlord hereby leases the Premises to Tenant and Tenant hereby leases the Premises from Landlord. The portions of the Project which are for the non-exclusive use of tenants of the Project, including without limitation, any public or common lobbies, common chases and conduits, mechanical and utility rooms, hallways, stairways, elevators and common walkways, common toilets, corridors and elevator lobbies to the extent not included in the Premises, pedestrian sidewalks, landscaped areas and trash enclosures, the exterior of the Project, the loading area, the Through Block Connector (as defined below), and bicycle parking and storage room to be located in the Building, are collectively referred to herein as the "**Common Areas**." Landlord reserves the right to modify Common Areas, provided that such modifications do not materially adversely affect Tenant's use of or access to the Premises for the Permitted Use.

2. **Delivery; Acceptance of Premises; Commencement Date.**

(a) **Delivery.** Landlord shall use commercially reasonable efforts to deliver the Premises to Tenant on or before the Target Delivery Date, as more particularly described in Section 2.4(a) of the Work Letter ("**Delivery**" or "**Deliver**"), and Landlord shall use commercially reasonable efforts to Substantially Complete the Shell and Core Improvements by the Target Substantial Completion Date, provided that notwithstanding anything to the contrary and for purposes of this Lease: (i) if Landlord would have Delivered the Premises on or before the Target Delivery Date but for Tenant Delay, then the date on which Landlord would have Delivered the Premises but for such Tenant Delay shall be deemed to be the Delivery Date, and (ii) if Landlord's Work is not Substantially Completed on or before the Target Substantial Completion Date but for Tenant Delay, then the date on which Landlord's Work would have been Substantially Completed but for such Tenant Delay shall be deemed to be the date of Substantial Completion; and in either such event, Landlord shall remain obligated to use commercially reasonable efforts to so Deliver the Premises and Substantially Complete the Landlord's Work in accordance with this Lease and the Work Letter. Following the Substantial Completion of the Shell and Core Improvements Landlord shall use commercially reasonable efforts to complete any remaining Site Improvements that are not complete as of the date of Substantial Completion of the Shell and Core Improvements as soon as reasonably practicable, which for all seasonal components of the Site Improvements shall be prior to the end of the first full planting season that begins after the date of Substantial Completion of the Shell and Core Improvements. Landlord covenants to construct the Premises and Common Areas in compliance with then applicable Legal Requirements.

(b) **Target Delivery Date**. If Landlord fails to Deliver the Premises on or before the Target Delivery Date, or if Landlord's Work is not Substantially Completed on or before the Target Substantial Completion Date, except as otherwise expressly provided herein, Landlord shall not be liable to Tenant for any loss or damage resulting therefrom and this Lease shall not be void or voidable.

(c) **Late Delivery**. Tenant shall be entitled to one (1) day of abatement of rent (the "**Rent Abatement**") owed to Landlord by Tenant hereunder for each day of certain delay, as described in this paragraph. If Tenant makes a CM Build Election under Section 3.1 of the Work Letter, Tenant shall be entitled to Rent Abatement in the event that Landlord does not Deliver the Premises to Tenant on or before the date which is sixty (60) days following the Target Delivery Date (as the same may be extended pursuant to this Lease for reasons of Force Majeure (as defined in Section 34) or Tenant Delay (and in such event, as so extended such date shall be referred to herein as the "**Abatement Start Date**"). If Tenant makes a Non-CM Build Election under Section 3.1 of the Work Letter, Tenant shall be entitled to Rent Abatement in the event that Landlord does not Substantially Complete the Shell and Core Improvements on or before the date which is sixty (60) days following the Target Substantial Completion Date (as the same may be extended pursuant to this Lease for reasons of Force Majeure or Tenant Delay (and in such event, as so extended such date shall be referred to herein as the "**Abatement Start Date**").

(d) **Completion Deadline**. Notwithstanding anything to the contrary set forth herein, Tenant shall not be entitled to any additional Rent Abatement for the period commencing two hundred ten (210) days after the Abatement Start Date (the "**Completion Deadline**"); provided, however, the Completion Deadline shall be deemed automatically extended to be coterminous with any Extended Deadline (as defined below) (Tenant in all events retaining the right to any Rent Abatement that accrued prior to the Completion Deadline). A table form of the abatement rights described hereinabove is as follows:

Period of Delay from applicable Target Date[1]	Tenant's Rent Abatement Right	Right to Terminate Lease
0-60 Days	No Abatement of Rent or Rent Offset	None
61-270 (or 61-300 if Extended Deadline applies[2])	Day-for-Day Rent Abatement for Each Day of Delay (calculated on per diem basis)	Right to terminate after 270 Days (or 300 Days if Extended Deadline Applies[3]). If Lease termination option not exercised, no further Rent Abatement accrues.

1 If Tenant makes a CM Build Election: the Target Delivery Date. If Tenant makes a Non-CM Build Election: the Target Substantial Completion Date.

2 Plus up to 10 business days depending on the number of days between the Completion Deadline (as the same may be extended as provided herein) and the date Tenant delivers its Termination Notice.

3 Plus the number of days determined as provided in Footnote 2 immediately above.

If in the case of a CM Build Election the Premises are not Delivered by the Completion Deadline (as such Deadline may be extended pursuant to this Lease for reasons of Force Majeure or Tenant Delay), or if in the case of a Non-CM Build Election the Shell and Core Improvements are not Substantially Complete by the Completion Deadline (as such Deadline may be extended pursuant to this Lease for reasons of Force Majeure or Tenant Delay), then, as Tenant's sole and exclusive remedy hereunder, Tenant may terminate this Lease with respect to the entire Premises upon written notice to Landlord given within ten (10) business days after the Completion Deadline (the "**Termination Notice**"); provided, however, if Landlord believes in good faith that Landlord will Deliver the Premises or Substantially Complete the Shell and Core Improvements, as the case may be, within thirty (30) days after receipt of the Termination Notice, then Landlord may notify Tenant thereof in writing (the " **Completion Notice**") within ten (10) business days after receipt of the Termination Notice, that the Premises will be Delivered or the Shell and Core Improvements will be Substantially Completed, as the case may be, within thirty (30) days, and Landlord shall have until the date that is thirty (30) days after timely delivery of the Termination Notice by Tenant (the " **Extended Deadline**") to Deliver the Premises, or Substantially Complete the Shell and Core Improvements as the case may be. To be effective, the Completion Notice shall include a certification from the Construction Manager (defined in the Work Letter) for that the Construction Manager believes in good faith that the Premises will be Delivered within such thirty (30) day period or the Shell and Core Improvements will be Substantially Completed within such thirty (30) day period, as the case may be. If the Premises have not been Delivered or the Shell and Core Improvements Substantially Completed, as the case may be, by the Extended Deadline (as such Deadline may be extended pursuant to this Lease for reasons of Force Majeure or Tenant Delay), then, as Tenant's sole and exclusive remedy hereunder, Tenant may terminate this Lease with respect to the entire Premises upon delivery to Landlord of a further Termination Notice within ten (10) business days after the Extended Deadline. If Tenant does not timely terminate this Lease as hereinabove provided, Tenant shall have no further right to terminate this Lease under this Section 2, no further Rent Abatement shall apply to the Lease (Tenant in all events retaining the right to any Rent Abatement that accrued prior to the Completion Deadline, and nothing herein shall reduce the Base Rent credit for the period between the Rent Commencement Date and Post Rent Credit Date as set forth in the Basic Lease Provisions), and Landlord shall Deliver the Premises, or Substantially Complete the Shell and Core Improvements, as the case may be, as soon as practicable thereafter. If the Lease is terminated under this Section 2, neither Landlord nor Tenant shall have any further rights, duties or obligations under this Lease, except with respect to provisions which expressly survive termination of this Lease, and upon written request of Landlord, Tenant shall execute such documents or agreements in commercially reasonable form as may be reasonably necessary to evidence such termination.

As used herein, the terms "**Landlord's Work**," "**Tenant Improvements**", "**Tenants' Work**," "**Tenant Delays**," "**Substantial Completion**," and "**Substantially Completed**" shall have the meanings set forth for such terms in the Work Letter.

(e) **Project Accounting**. Landlord shall provide to Tenant (a) on a quarterly basis within 15 days of the end of each quarter, an updated report as to certain costs of the Non-TI Project Improvements and the Tenant Improvements for the categories of expense identified in the attached **Exhibit D-1** (collectively, "**Reported Project Costs**"), in the format attached hereto as **Exhibit D-1**, and (b) after final confirmation of the completion of the Non-TI Project Improvements and the Tenant Improvements, a final report with respect to the Reported Project Costs in the format attached hereto as **Exhibit D-1** (such documents, and any others Landlord may consent to provide including invoices, supporting schedules, and any other document provided or subject to physical inspection, collectively, the "**Disclosed Documents**"). Tenant intends to use the Disclosed Documents for the preparation and audit of certain financial statements that will be filed by Tenant with the Securities and Exchange Commission ("**SEC**") pursuant to applicable law (the "**Special Permitted Use**"). Any Disclosed Documents so provided shall be subject to the following terms and conditions:

a. Any Disclosed Documents provided to Tenant shall be used by Tenant only for the Special Permitted Use and for no other use. Specifically, the Disclosed Documents shall be used only to prepare the financial statements to be disclosed publicly by Tenant and shall not themselves be disclosed to third parties, unless required solely for the purpose of the preparation or audit of such financial statements (the "**Preparing/Auditing Parties**").

b. Any Disclosed Documents provided to Tenant shall be considered "**Confidential Information**" and Tenant shall not copy, duplicate, deliver, disclose or transmit the Disclosed Documents or their content to any third party without Landlord's express prior written approval, except to the Preparing/Auditing Parties solely for the purpose of the preparation or audit of such financial statements, provided, however, that Landlord may require any of the Preparing/Auditing Parties (other than Tenant's independent registered public accounting firm) and any other third party inspecting or receiving any of the Disclosed Documents to sign a non-disclosure agreement, in a form reasonably acceptable to Landlord and such other third party, prior to such inspection or receipt.

c. To the extent that any Disclosed Document is based upon information received from or prepared by a third party, such Disclosed Document will be prepared in accordance with a specific scope of work and maybe subject to specific limitations regarding its use by third parties, including Tenant.

d. Disclosed Documents should be prepared on an accrual basis.

e. Neither Landlord nor any of its affiliates, employees, agents, successors or assigns (collectively, the "**Landlord Preparers**"), nor any third party that prepared any Disclosed Document, has made or shall be deemed to have made any representations, statements or warranties of any kind as to (i) the accuracy or validity of the

information contained in any Disclosed Document; or (ii) the condition or cost of construction of the Project in any respect as a consequence of providing the Disclosed Documents.

f. Tenant is responsible for making its own independent assessment and investigation of the condition and cost of construction of the Project.

g. To the extent permitted under applicable law, Tenant agrees to indemnify, defend and hold the Landlord Preparers harmless from and against losses, costs, damages, claims or causes of action (including, without limitation, any actions initiated by Tenant shareholders) arising out of any use of the Disclosed Information by Tenant or the Preparing/Auditing Parties, or their respective agents, employees or representatives, including, without limitation, the Special Permitted Use and any use in violation of paragraphs (a) and (b) above.

h. Within 15 days of the end of each quarter, Landlord shall provide: (a) a complete copy of all approved General Contractor form AIA 702's for such quarter (to the extent received), (b) updated report in a format consistent with **Exhibit D-1**, (c) a copy of all invoices received related to architecture and design costs incurred for such quarter (summary pages only), and (d) the dollar value by category type (e.g. insurance, taxes, etc.) of all other non-General Contractor and non-architecture-and-design building costs as reasonably determined by Landlord. To the extent that any non-General Contractor and non-architecture-and-design building cost category represents greater than 2% of the cumulative Reported Project Costs for the most recent quarter end, as reasonably determined by Landlord, Tenant shall have the right to inspect supporting summary invoices for such cost incurred for the most recent quarter related to such cost category, provided however that Landlord may limit access to this information to physical inspection only. Tenant's employees, affiliates or agents shall have rights to physically inspect a cost summary by category type that supports the total reported on the General Contractor form AIA 702. Landlord shall be available to answer reasonable questions necessary for the Tenant to gain comfort over any cost balances through inquiry and analytics. Tenant may request additional information with respect to Reported Project Costs directed through Landlord's Chief Financial Officer, provided that the release of any such information shall be in the Landlord's sole discretion.

i. Tenant's employees, affiliates or agents shall be entitled to at least one meeting per quarter, within 20 days of the end of each quarter, with Landlord Preparers to review and discuss the methods and key assumptions used to prepare the reported information in Disclosed Documents. Such meeting shall be either by telephone or in-person. Any requested in-person meeting shall be at a location determined by the Landlord Preparers.

j. Upon 10 days' advance written notice within 20 days of the end of each quarter, Tenant's employees, affiliates or agents shall be entitled to physically inspect the 50/60 Binney land parcel, the 60 Binney Building, and those portions of the 50 Binney Building not then delivered to a tenant, not more than once per quarter for the purposes of independently

corroborating the reported costs on **Exhibit D-1**. Each such inspection shall be limited to no more than one hour.

k. Landlord shall be available to discuss (on a quarterly basis within 20 days of the end of each quarter), along with Landlord's General Contractor, if possible, the general contractor contract costs associated with the Non-TI Project Improvements as reported each quarter in **Exhibit D-1**, including the allocation of such amount between the garage, the 50 Binney Building and the 60 Binney Building as prepared by the general contractor (the "**GC Allocation**"). Tenant's employees, affiliates or agents shall have the right to physically inspect the GC Allocation, to the extent Landlord can reasonably obtain such GC Allocation. Landlord shall use reasonable efforts to respond to any related inquiries from the Tenant's employees, affiliates or agents related to the GC Allocation. Tenant may request additional information with respect to the GC Allocation directed through Landlord's Chief Financial Officer, provided that the release of any such information shall be in the Landlord's sole discretion. The Landlord Preparers have not made, and shall not be deemed to have made, any representations, statements or warranties of any kind as to the accuracy or validity of the information or any allocations.

l. Tenant's employees, affiliates or agents may request additional information reasonably necessary for Tenant to complete a land appraisal as required for the preparation and audit of certain financial statements that will be filed by Tenant with the SEC.

m. Tenant may engage a third party firm to assist with review of Reported Project Costs.

Tenant, for itself and its agents, affiliates, successors and assigns, hereby releases and forever discharges each of the Landlord Preparers from any and all rights, claims and demands at law or in equity, whether direct or indirect, known or unknown, foreseen or unforeseen, at the time of execution of this Lease, which Tenant has or may have in the future, arising out of the financial information provided by Landlord in the Disclosed Documents. With respect to the waiver and release set forth herein relating to unknown and unsuspected claims, Tenant hereby acknowledges that such waiver and release is being made after obtaining the advice of counsel and with full knowledge and understanding of the consequences and effects of such waiver. Nothing set forth herein shall in any way waive or limit any right or obligation of Landlord or of Tenant as otherwise set forth in the Lease which either party now has or may have in the future. Tenant's agents shall only have access to the Disclosed Documents and other provisions under this Section 2(e) to the extent such agents are real estate consultants, the Tenant's independent registered public accounting firm, or other agents reasonably related to the Special Permitted Use. Any Tenant agents for which Tenant desires to share Disclosed Documents or otherwise subject to this Section 2(e) shall be subject to reasonable approval rights by Landlord, except for Tenant's independent registered public accounting firm. Landlord approves Colliers International as an acceptable real estate consultant to act as a Tenant agent for the sole purpose of completing the land appraisal in Section 2(e)(l).

(f) **Term**. The "**Term**" of this Lease shall be the Base Term, as defined above in the Basic Lease Provisions, and any Extension Terms which Tenant may elect pursuant to Section 39 below.

(g) **Acceptance of Premises**. Tenant shall accept the Premises on the Delivery Date in the condition in which the Premises are required to be delivered in accordance with the Work Letter.

(h) **Complete Agreement**. Tenant agrees and acknowledges that, except as may be expressly set forth herein or in the Work Letter, neither Landlord nor any agent of Landlord has made any representation or warranty with respect to the condition of all or any portion of the Premises or the Project, and/or the suitability of the Premises or the Project for the conduct of Tenant's business, and Tenant waives any implied warranty that the Premises or the Project are suitable for the Permitted Use. This Lease constitutes the complete agreement of Landlord and Tenant with respect to the subject matter hereof and supersedes any and all prior representations, inducements, promises, agreements, understandings and negotiations which are not contained herein. Landlord in executing this Lease does so in reliance upon Tenant's representations, warranties, acknowledgments and agreements contained herein.

3. **Rent**.

(a) **Base Rent**. The first month of Base Rent for the Premises shall be due and payable on the Rent Commencement Date, provided, however, that in addition to the Base Rent credit for the period between the Rent Commencement Date and Post Rent Credit Date as set forth in the Basic Lease Provisions, Tenant shall be entitled to a credit against Base Rent for 58,108 rentable square feet of the Premises for the first two (2) months after the Post Rent Credit Date, which credit shall be in the amount of $702,138.34 and applied as follows: (i) $351,069.17 in first calendar month after the Post Rent Credit Date, and (ii) $351,069.17 in the second calendar month after the Post Rent Credit Date.

Tenant shall pay to Landlord in advance, without demand, abatement, deduction or set-off, monthly installments of Base Rent on or before the first day of each calendar month during the Term hereof, from and after the Rent Commencement Date, in lawful money of the United States of America, at the office of Landlord for payment of Rent set forth above, or to such other person or at such other place as Landlord may from time to time designate in writing. Payments of Base Rent for any fractional calendar month shall be prorated. The obligation of Tenant to pay Base Rent and other sums to Landlord and the obligations of Landlord under this Lease are independent obligations. Tenant shall have no right at any time to abate, reduce, or set-off any Rent (as defined in Section 5) due hereunder except for any abatement as may be expressly provided in this Lease.

(b) **Additional Rent**. In addition to Base Rent, Tenant agrees to pay to Landlord as additional rent ("**Additional Rent**"): (i) beginning on the Post Rent Credit Date,

Tenant's Share of "**Operating Expenses**" (as defined in Section 5), provided that for the first 2 months after the Post Rent Credit Date, Tenant's Share of Operating Expenses for the Project, Tenant's Share of 60 Binney Building Expenses and Tenant's Share of Operating Expenses for the Premises shall be calculated based on 195,000 rentable square feet in the Premises and Tenant's Share of Campus Expenses shall be calculated based on 169,475 square feet of "gross floor area" (as defined in Section 10) in the Premises, (i.e., for such 2-month period, Tenant's Share of Operating Expenses for the Project shall be 36.76%, Tenant's Share of 60 Binney Building Expenses shall be 76.25%, Tenant's Share of Operating Expenses for the Premises shall be 77.04% and Tenant's Share of Campus Expenses shall be 14.03%), and thereafter Tenant's Share of Operating Expenses for the Project, Tenant's Share of 60 Binney Building Expenses, Tenant's Share of Operating Expenses for the Premises and Tenant's Share of Campus Expenses shall be as set forth in the Basic Lease Provisions, and provided further that beginning on the Delivery Date in the event of a CM Build Election, or the date of Substantial Completion of the Shell and Core Improvements in the event of a Non-CM Build Election, Tenant shall pay for the costs of the Utilities used in the construction of the Tenant Improvements or consumed in the Premises as provided in Section 11, (ii) beginning on the Post Rent Credit Date, Tenant's Share of Operating Expenses for the Garage, and (iii) as and when due under this Lease, any and all other amounts Tenant assumes or agrees to pay under the provisions of this Lease, including, without limitation, any and all other sums that may become due by reason of any Default of Tenant.

4. **Base Rent Adjustments**. Base Rent shall be increased on each annual anniversary of the Post Rent Credit Date (or if the Post Rent Credit Date does not occur on the first day of a month, on each annual anniversary of the first day of the first full calendar month following the month in which the Post Rent Credit Date occurs) (each such date, an "**Adjustment Date**") by multiplying the Base Rent payable immediately before the respective Adjustment Date by the Base Rent Adjustment Percentage and adding the resulting amount to the Base Rent payable immediately before such Adjustment Date. Base Rent, as so adjusted, shall thereafter be due as provided herein.

If Tenant elects pursuant to Section 6.2 of the Work Letter to receive the Additional TI Allowance, as of the Post Rent Credit Date Base Rent shall be increased from and after the Post Rent Credit Date by an amount equal to $92,126.95 per year (which is calculated based on the amount of the Additional TI Allowance amortized over the 120 months in the remainder of the Base Term from and after the Post Rent Credit Date at an interest rate of 8% per year, compounded monthly, and also equal to $0.1456 per year for each dollar of the Additional TI Allowance).

5. **Operating Expense Payments**. Landlord shall deliver to Tenant a written estimate of Operating Expenses and Tenant's Share of Operating Expenses (separated into different categories of expenses for each of: (i) the 60 Binney Building; (ii) the Garage; (iii) the Project (to the extent not included in (i) and (ii); (iv) the Campus; and (v) the Premises) for each calendar year during the Term (the "**Annual Estimate**") at least 30 days prior to the beginning

of such calendar year, which may be revised by Landlord from time to time during such calendar year. Commencing on the Post Rent Credit Date, and thereafter during each month of the Term, on the same date that Base Rent is due, Tenant shall pay Landlord an amount equal to 1/12th of Tenant's Share of the Annual Estimate. Payments for any fractional calendar month shall be prorated.

In addition, on or before October 15, 2017 Landlord will deliver to Tenant a report of Tenant's Share of Operating Expenses for the Project, Tenant's Share of Operating Expenses for the Garage, Tenant's Share of Campus Expenses, Tenant's Share of 60 Binney Building Expenses and Tenant's Share of Operating Expenses for the Premises and Tenant's payments, all for the partial calendar year from January 1 through September 30, 2017.

The term "**Operating Expenses**" means (i) all costs and expenses actually incurred or accrued each calendar year by Landlord with respect to the use, operation, maintenance, and repair of the Project, including without limitation Taxes (as defined in Section 9), a property management fee to Landlord or an affiliate thereof of 2% of Base Rent ("**Landlord's Property Management Fee**"), and to the extent of Eligible Capital Items (as defined below), capital repairs, replacements and improvements of the Project reasonably required for the proper operation of the Project, using generally accepted accounting principles consistently applied ("**GAAP**"); and (ii) the Building Share of Campus Expenses (as defined below), excluding only:

(a) the original design and construction costs of the Project and costs of correcting defects in such original design and construction (including materials and equipment);

(b) capital expenditures for expansion of the Project;

(c) all capital expenses, except as allowed per the definition of Eligible Capital Items;

(d) interest, principal payments of Mortgage (as defined in Section 27) debts of Landlord, financing costs and amortization of funds borrowed by Landlord, whether secured or unsecured and all payments of base rent (but not taxes or operating expenses) under any ground lease or other underlying lease of all or any portion of the Project;

(e) depreciation of the Project (except for Eligible Capital Items, the cost of which are includable in Operating Expenses);

(f) advertising, legal and space planning expenses and leasing commissions and other costs and expenses incurred in procuring and leasing space to tenants for the Project, including any leasing office maintained in the Project, free rent and construction allowances for tenants;

(g) legal and other expenses incurred in the negotiation or enforcement of leases;

(h) completing, fixturing, improving, renovating, painting, redecorating or other work, which Landlord pays for or performs for other tenants within their premises, and costs of correcting defects in such work;

(i) costs of utilities outside normal business hours sold to tenants of the Project;

(j) costs to be reimbursed by other tenants of the Project or Taxes to be paid directly by Tenant or other tenants of the Project, whether or not actually paid;

(k) salaries, wages, benefits and other compensation paid to officers and employees of Landlord who are not assigned in whole or in part to the operation, management, maintenance or repair of the Project, except for one regional manager who is routinely and materially involved in asset management matters for the Building (the parties agreeing that costs associated with such regional manager shall be equitably allocated between the Project and the other properties with respect to which such regional manager provides services);

(l) general organizational, administrative and overhead costs relating to maintaining Landlord's existence, either as a corporation, partnership, or other entity, including general corporate, legal and accounting expenses, employee training programs, tenant relationship expenses, recruiting and/or placement fees, health or sports club dues and employee parking and transportation charges for regular commutes (but not for parking and transportation charges for meetings at locations other than the management office) and Landlord's membership and business organization fees;

(m) costs (including attorneys' fees and costs of settlement, judgments and payments in lieu thereof) incurred in connection with disputes with tenants, other occupants, or prospective tenants, and costs and expenses, including legal fees, incurred in connection with negotiations or disputes with employees, consultants, management agents, leasing agents, purchasers or mortgagees of the Building;

(n) costs incurred by Landlord due to the violation by Landlord, its employees, agents or contractors or any tenant of the terms and conditions of any lease of space in the Project or any Legal Requirement (as defined in Section 7);

(o) penalties, fines or interest incurred as a result of Landlord's inability or failure to make payment of Taxes and/or to file any tax or informational returns when due, or from Landlord's failure to make any payment of Taxes required to be made by Landlord hereunder before delinquency;

(p) overhead and profit increment paid to Landlord or to subsidiaries or affiliates of Landlord for goods and/or services in or to the Project to the extent the same exceeds the costs of such goods and/or services rendered by unaffiliated third parties on a competitive basis;

(q) costs of Landlord's charitable or political contributions, or of fine art maintained at the Project;

(r) costs in connection with services (including electricity), items or other benefits of a type which are not standard for the Project and which are not available to Tenant without specific charges therefor, but which are provided to another tenant or occupant of the Project, whether or not such other tenant or occupant is specifically charged therefor by Landlord;

(s) costs incurred in the sale or refinancing of the Project;

(t) net income taxes of Landlord or the owner of any interest in the Project, franchise, capital stock, gift, estate or inheritance taxes or any federal, state or local documentary taxes imposed against the Project or any portion thereof or interest therein;

(u) expenses incurred by Landlord for repairs or other work occasioned by fire, windstorm or other casualty insured against, or condemnation, to the extent of reimbursement of such expenses (excluding commercially reasonable deductibles);

(v) expenses for the replacement of any item covered under warranty to the extent of the amount covered, less any reasonable costs of enforcement;

(w) expenses for any item or service not provided to Tenant but provided to any other tenants in the Building, and any costs for services or utilities provided to other tenants in the Building which are in excess of those which are to be provided to Tenant under this Lease without additional or separate charge;

(x) the cost of any separate electrical meter or any survey Landlord may provide to any of the other tenants in the Building (except to the extent required by applicable Legal Requirements to be performed generally for tenant spaces in the Building, such as pursuant to the Cambridge Building Energy Use Disclosure Ordinance (as defined in Section 7));

(y) cost of mail center services for other tenants in the Building if such services are not utilized by Tenant;

(z) reserves;

(aa) fees or costs paid to affiliates of Landlord (other than the management fee addressed above) to the extent that such fees exceed the customary amount charged for the services provided;

(bb) the operating expenses incurred by Landlord relative to retail stores, hotels and any specialty service, such as a shoe shine service, in the Building or on the Project, unless such operating expenses are expressly included as provided in this Lease, and the costs of installing, operating and maintaining any specialty service facility, observatory, broadcasting facilities, luncheon club, museum, athletic or recreational club or child care facility, in all events other than amenities constructed as part of the construction of the Shell, Core and Site Improvements;

(cc) costs incurred to clean up, contain, abate, remedy or remove from the Project any Hazardous Materials constituting or arising from a Pre-Existing Condition (as defined in Section 30) or introduced to the Project by another tenant or occupant or by Landlord;

(dd) costs of signs in or on the Project identifying in each case only (i) the owner of the Building, (ii) another tenant, or (iii) other tenants;

(ee) all costs incurred due to violation by Landlord or any other tenant of the terms and conditions of any lease;

(ff) travel and entertainment costs and the costs of gifts;

(gg) costs of any new or increased insurance coverages if and to the extent any such new or increased coverages are not of the type and in amounts typically carried by landlords of (or required to be carried by first mortgagees of) comparable Class A, multi-tenant office and laboratory buildings in Cambridge, Massachusetts;

(hh) rentals for items (except when needed in connection with normal repairs and maintenance of permanent systems), which if purchased, rather than rented, would constitute a capital improvement to the extent that such payments exceed the amount which could have been included in Operating Expenses has Landlord purchased such equipment rather than leasing such equipment;

(ii) rent and other costs incurred in connection with a management or leasing office to the extent that the rental rate for such office space exceeds the fair market rental value of office space occupied by management personnel of comparable Class A office and laboratory buildings in Cambridge, Massachusetts; and

(jj) any expenses otherwise includable within Operating Expenses to the extent actually reimbursed by persons other than tenants of the Project under leases for space in the Project.

Prior to December 1 of each calendar year in the Term, Landlord shall deliver to Tenant a copy of its proposed budget for Operating Expenses for the Project for the upcoming calendar year. Tenant acknowledges that delivery of such budget is for the convenience of Tenant at Tenant's request, and such budget is not binding upon Landlord and subject to change at any time from time to time prior to and during the calendar year for which it is prepared.

Within 90 days after the end of each calendar year, Landlord shall furnish to Tenant a statement (an "**Annual Statement**") showing in reasonable detail: (a) the total and Tenant's Share of actual Operating Expenses, each for the previous calendar year, and (b) the total of Tenant's payments in respect of Operating Expenses for such year. If Tenant's Share of actual Operating Expenses for such year exceeds Tenant's payments of Operating Expenses for such year, the excess shall be due and payable by Tenant as Rent within 30 days after delivery of such Annual Statement to Tenant. If Tenant's payments of Tenant's Share of Operating Expenses for such year exceed Tenant's Share of actual Operating Expenses for such year Landlord shall pay the excess to Tenant within 30 days after delivery of such Annual Statement, except that after the expiration, or earlier termination of the Term or if Tenant is delinquent in its obligation to pay Rent, Landlord shall pay the excess to Tenant after deducting all other amounts due Landlord.

The Annual Statement shall be final and binding upon Tenant unless Tenant, within 12 months after Tenant's receipt thereof, shall contest any item therein by giving written notice to Landlord, specifying each item contested and the reason therefor. If, during such 12 month period, Tenant reasonably and in good faith questions or contests the accuracy of Landlord's statement of Tenant's Share of Operating Expenses, Landlord will provide Tenant with access to Landlord's books and records relating to the operation of the Project and such information as Landlord reasonably determines to be responsive to Tenant's questions relating to the operation of the Project (the "**Expense Information**"). If after Tenant's review of such Expense Information, Landlord and Tenant cannot agree upon the amount of Tenant's Share of Operating Expenses, then Tenant shall have the right to have a nationally or regionally recognized independent public accounting firm selected by Tenant and working pursuant to a fee arrangement other than a contingent fee (at Tenant's sole cost and expense), audit and/or review the Expense Information for the year in question (the "**Independent Review**"), provided that Tenant has given Landlord written notice at least 5 business days in advance of such audit or review, which notice shall identify the name of the independent public accounting firm describe the type of fee arrangements under which such firm is to conduct such audit or review. The results of any such Independent Review shall be binding on Landlord and Tenant. If the Independent Review shows that the payments actually made by Tenant with respect to Operating Expenses for the calendar year in question exceeded Tenant's Share of Operating Expenses for such calendar year, Landlord shall at Landlord's option either (i) credit the excess

amount to the next succeeding installments of estimated Operating Expenses or (ii) pay the excess to Tenant within 30 days after delivery of such statement, except that after the expiration or earlier termination of this Lease or if Tenant is delinquent in its obligation to pay Rent, Landlord shall pay the excess to Tenant after deducting all other amounts due Landlord. If the Independent Review shows that Tenant's payments with respect to Operating Expenses for such calendar year were less than Tenant's Share of Operating Expenses for the calendar year, Tenant shall pay the deficiency to Landlord within 30 days after delivery of such statement. If the Independent Review shows that Tenant has overpaid with respect to Operating Expenses by more than 4% then Landlord shall reimburse Tenant for all costs incurred by Tenant for the Independent Review. Operating Expenses for the calendar years in which Tenant's obligation to share therein begins and ends shall be prorated. Notwithstanding anything set forth herein to the contrary, if the Building is not at least 95% occupied on average during any year of the Term, Tenant's Share of Operating Expenses for such year shall be computed as though the Building had been 95% occupied on average during such year.

"**Campus Expenses**" shall mean the actual costs and expenses of operating the campus-wide community activities required under the special permit for the Campus issued by the Cambridge Planning Board on June 1, 2010 for the Alexandria Center at Kendall Square ("**Special Permit**"), or otherwise provided to the Campus, including, without limitation, the following: (i) compliance with the PTDM (defined in Section 10 below), including without limitation costs of causing the EZ Ride Shuttle Service of CRTMA (defined in Section 10) to service the Building (and/or the actual costs and expenses of a dedicated shuttle service for the Campus) or a separate shuttle bus service operated for the benefit of the Campus ("**PTDM and Shuttle Expenses**"); (ii) after its initial construction, the cost of the mixed mode transportation center to be located at 41 Linskey Way pursuant to the Special Permit, including without limitation, operating expenses, utilities, repairs and reserves for future repairs, maintenance, cleaning, operations, insurance and Taxes; and (iii) preparation and implementation of marketing and merchandising plans to generate street activation for the Campus.

"**Eligible Capital Items**" shall mean all capital repairs, replacements and improvements made or installed during the Term, which are: (x) for the purpose of reducing the amount of Operating Expenses, but only to the extent of the actual reduction in the amount of Operating Expenses; or (y) required by applicable Legal Requirements first enacted after the date of this Lease; or (z) with respect to all capital items not included pursuant to the immediately preceding clauses (x) and (y), repairs, replacements and improvements reasonably required for the proper operation of the Project and made or installed after the seventh anniversary of the Post Rent Credit Date, provided that Eligible Capital Items shall exclude repairs to or replacements of the foundation or structure of the Building made at any time during the Term, but shall include without limitation repairs to or replacement of exterior windows and roof made after the tenth (10) anniversary of the Post Rent Credit Date. Eligible Capital Items shall be amortized over the useful life of the particular item in accordance with GAAP, adjusted to reflect 24/7/365 operation and further adjusted to be net of the period of any applicable written warranty issued to Landlord

for a particular capital item, in each case together with interest of 7.5% on the unamortized amount.

"**Tenant's Share**" shall be the percentages set forth in the Basic Lease Provisions, on a category by category basis, subject to adjustment as set forth herein. Landlord may equitably increase Tenant's Share of Operating Expenses for any item of expense or cost reimbursable by Tenant that relates to a repair, replacement, or service that benefits only the Premises or only a portion of the Project that includes the Premises or that varies with occupancy or use. Base Rent, Tenant's Share of Operating Expenses for the Project, Tenant's Share of Operating Expenses for the Garage, Tenant Share of Campus Expenses, Tenant's Share of 60 Binney Building Expenses, and Tenant's Share of Operating Expenses for the Premises, and all other amounts payable by Tenant to Landlord hereunder are collectively referred to herein as "**Rent**."

The rentable square footage of the Premises and the Building, and the measurements upon which Tenant's Share have been calculated, have been determined in accordance with the Standard Method of Measuring Floor Area in Office Buildings as adopted by the Building Owners and Managers Association International (ANSI/BOMA Z65.1-1996), as customarily modified for laboratory properties in the Cambridge, Massachusetts market, based upon the Shell, Core and Site Construction Documents (as defined in the Work Letter), as set forth in the measurements set forth **Exhibit A-1**. If, as of the date upon which Landlord's Work in the Premises is Substantially Complete (the "**Substantial Completion Date**"), the measurement of the Building, as calculated from the as-constructed BIM, varies from by more than 1,250 rentable square feet from the plans attached hereto as **Exhibit A**, the Building measurements shall be adjusted based upon the as-constructed BIM set, and the square footage of the Premises, the Building, and related calculations shall be adjusted accordingly. Tenant shall have the right to have its architect review the as-constructed BIM set to confirm such measurements within 30 days after the Substantial Completion Date and receipt of the as-constructed BIM set as the as-built plans in accordance with Section 2.7(b) of the Work Letter.

In addition, Tenant's Share shall be subject to further adjustment for changes in the physical size of the Premises or the Building occurring thereafter.

6. **Security Deposit**.

(a) **Security Deposit**. Tenant shall deposit with Landlord, upon delivery of an executed copy of this Lease to Landlord, a security deposit (the "**Security Deposit**") for the performance of all of Tenant's obligations hereunder in the amount set forth in the Basic Lease Provisions as the Initial Security Deposit Amount. Prior to the time that Tenant submits its first Requisition under Section 6.8 of the Work Letter, Tenant shall increase the Security Deposit to be equal to the Deferred Security Deposit Amount. The Security Deposit shall be in the form of an unconditional and irrevocable letter of credit (the "**Letter of Credit**"): (i) in form and substance satisfactory to Landlord, (ii) naming Landlord as beneficiary, (iii) expressly allowing Landlord to draw upon it at any time from time to time by delivering to the issuer notice that

Landlord is entitled to draw thereunder, (iv) issued by an FDIC-insured financial institution reasonably satisfactory to Landlord, and (v) redeemable by presentation of a sight draft in Massachusetts or California. If Tenant does not provide Landlord with a substitute Letter of Credit complying with all of the requirements hereof or evidence of the renewal of the then current Letter of Credit at least 10 days before the stated expiration date of any then current Letter of Credit, Landlord shall have the right to draw the full amount of the current Letter of Credit and hold the funds drawn in cash without obligation for interest thereon as the Security Deposit. The Security Deposit shall be held by Landlord as security for the performance of Tenant's obligations under this Lease. The Security Deposit is not an advance rental deposit or a measure of Landlord's damages in case of Tenant's default. Upon each occurrence of a Default (as defined in Section 20), Landlord may use all or any part of the Security Deposit to pay delinquent payments due under this Lease, and the cost of any damage, injury, expense or liability caused by such Default, without prejudice to any other remedy provided herein or provided by law. Upon any such use of all or any portion of the Security Deposit, Tenant shall pay Landlord on demand the amount that will restore the Security Deposit to the amount set forth in the Basic Lease Provisions. Upon bankruptcy or other debtor-creditor proceedings against Tenant, the Security Deposit shall be deemed to be applied first to the payment of Rent and other charges due Landlord for periods prior to the filing of such proceedings. Upon any such use of all or any portion of the Security Deposit, Tenant shall, within 5 business days after demand from Landlord, restore the Security Deposit to its original amount. If Tenant shall fully perform every provision of this Lease to be performed by Tenant, the Security Deposit, or any balance thereof (i.e., after deducting therefrom all amounts to which Landlord is entitled under the provisions of this Lease), shall be returned to Tenant (or, at Landlord's option, to the last assignee of Tenant's interest hereunder) within 60 days after the expiration or earlier termination of this Lease.

(b) **Transfer by Landlord**. If Landlord transfers its interest in the Project or this Lease, Landlord shall either (a) transfer any Security Deposit then held by Landlord to a person or entity assuming Landlord's obligations under this Section 6, or (b) return to Tenant any Security Deposit then held by Landlord and remaining after the deductions permitted herein. Upon such transfer to such transferee or the return of the Security Deposit to Tenant, Landlord shall have no further obligation with respect to the Security Deposit, and Tenant's right to the return of the Security Deposit shall apply solely against Landlord's transferee. The Security Deposit is not an advance rental deposit or a measure of Landlord's damages in case of Tenant's default. Landlord's obligation respecting the Security Deposit is that of a debtor, not a trustee, and no interest shall accrue thereon.

(c) **Security Deposit Reduction**. If, on each of the anniversaries of the Post Rent Credit Date listed below (each, a "**Anniversary Date**"), Tenant meets or exceeds the requirements that (i) the Market Capitalization of Tenant (as defined below) shall be at least Five Billion Dollars ($5,000,000,000) and Tenant's stock shall be listed on either the New York Stock Exchange or the NASDAQ stock market, and (ii) no Default by Tenant under this Lease shall have occurred or be continuing (collectively, the "**Reduction Requirements**" and each a

"**Reduction Requirement**"), then as provided below in this Section the Security Deposit shall be reduced by the amounts set forth in the table below. "**Market Capitalization**" shall mean the product of the number of issued and outstanding shares of Tenant as of the most recent of the last December 31 or quarter-end date (the most recent of which shall be the "**Market Cap Measurement Date**") as set forth in the Annual Report or Quarterly Report on Form 10-Q filed with the SEC by Tenant for the most recent of either the last year or quarter ending prior to the Anniversary Date, multiplied by the closing price of such shares on such Market Cap Measurement Date.

Anniversary Date	**Amount of Reduction to Security Deposit (the "Reduction Amount")**
Fourth (4th) Annual Anniversary of the Post Rent Credit Date	$1,529,194.17
Fifth (5th) Annual Anniversary of the Post Rent Credit Date	$1,529,194.17
Sixth (6th) Annual Anniversary of the Post Rent Credit Date	$1,529,194.17

The "**Reduced Security Deposit**" shall mean the amount of the Security Deposit required to be held by Landlord under this Lease as of the Reduction Date, less the Reduction Amount. If Tenant provides Landlord with written evidence reasonably satisfactory to Landlord that Tenant has met all of the Reduction Requirements, then Landlord shall return the unapplied portion of the Security Deposit then held by Landlord, less the Reduced Security Deposit, to Tenant within 60 days of Tenant's delivery of such written evidence. If Landlord returns to Tenant any portion of the Security Deposit in accordance with this Section, then from and after the date such monies are returned to Tenant, the "**Security Deposit**" shall be deemed to be the Reduced Security Deposit for all purposes of this Lease.

7. **Use.** The Premises shall be used solely for the Permitted Use set forth in the Basic Lease Provisions, and in compliance with all laws, orders, judgments, ordinances, regulations, codes, directives, permits, licenses, covenants and restrictions now or hereafter applicable to the Premises, and to the use and occupancy thereof, including, without limitation, the Americans With Disabilities Act, 42 U.S.C. § 12101, et seq. (together with the regulations promulgated pursuant thereto, "**ADA**") (collectively, "**Legal Requirements**" and each, a "**Legal Requirement**"). Tenant shall, upon 5 days' written notice from Landlord (or sooner if required by order of a Governmental Authority), (a) discontinue any use of the Premises which is declared by any Governmental Authority (as defined in Section 9) having jurisdiction to be a violation of a Legal Requirement, or (b) challenge the notice and indemnify Landlord from any liability, loss, cost, and expense, including penalties and fines, related to Tenant's continued

violation, it being understood that Tenant may elect in its sole discretion to proceed as required under clause (a) or (b) of this sentence. Tenant will not use or permit the Premises to be used for any purpose or in any manner that would void Tenant's or Landlord's insurance, increase the insurance risk, or cause the disallowance of any sprinkler or other credits, provided that such Landlord's insurance is consistent with the insurance policies carried by other owners of comparable research and development buildings with similar laboratory uses and shall not prevent the Premises from being used for the Permitted Use. Tenant shall not permit any part of the Premises to be used as a "**place of public accommodation**", as defined in the ADA or any similar legal requirement. Tenant shall reimburse Landlord promptly upon demand for any additional premium charged for any such insurance policy by reason of Tenant's failure to comply with the provisions of this Section or otherwise caused by Tenant's use and/or occupancy of the Premises to the extent the insurance company specifically attributes to Tenant such additional premium. Tenant will use the Premises in a careful, safe and proper manner and will not commit or permit waste, overload the floor or structure of the Premises, subject the Premises to use that would damage the Premises or obstruct or interfere with the rights of Landlord or other tenants or occupants of the Project, including conducting or giving notice of any auction, liquidation, or going out of business sale on the Premises, or using or allowing the Premises to be used for any unlawful purpose. Tenant shall cause any equipment or machinery to be installed in the Premises so as to reasonably prevent sounds or vibrations from the Premises from extending into Common Areas, or other space in the Project. Tenant shall not place any machinery or equipment weighing 500 pounds or more in or upon the Premises or transport or move such items through the Common Areas of the Project or in the Project elevators without the prior written consent of Landlord. Except as may be provided under the Work Letter, Tenant shall not, without the prior written consent of Landlord, use the Premises in any manner which will require ventilation, air exchange, heating, gas, steam, electricity or water beyond the existing capacity of the Project as proportionately allocated to the Premises based upon Tenant's Share as usually furnished for the Permitted Use.

Landlord shall, as an Operating Expense (to the extent such Legal Requirement is generally applicable to similar buildings in the area in which the Project is located) or at Tenant's expense (to the extent such Legal Requirement is applicable solely by reason of Tenant's, as compared to other tenants of the Project, particular use of the Premises) make any alterations or modifications to the Common Areas or the exterior of the Building that are required by Legal Requirements, including the ADA, to the extent such Legal Requirements are enacted subsequent to the date of this Lease. Tenant, at its sole expense, shall make any alterations or modifications to the interior of the Premises that are required by Legal Requirements (including, without limitation, compliance of the Premises with the ADA. Notwithstanding any other provision herein to the contrary, Tenant shall be responsible for any and all demands, claims, liabilities, losses, costs, expenses, actions, causes of action, damages or judgments, and all reasonable expenses incurred in investigating or resisting the same (including, without limitation, reasonable attorneys' fees, charges and disbursements and costs of suit) (collectively, "**Claims**") arising out of or in connection with Legal Requirements, and Tenant shall indemnify, defend, hold and save Landlord harmless from and against any and all Claims

arising out of or in connection with any failure of the Premises to comply with any Legal Requirement.

The Project is subject to certain title restrictions more particularly referenced in **Exhibit B**; all references herein to "**Legal Requirements**" shall be deemed to include the same.

Tenant shall have access to the Premises and Common Areas, and subject to the provisions of Section 10, the Garage, 24 hours per day, 7 days per week, 365 days per year, subject to the terms of this Lease and to compliance with such security or monitoring systems and procedures as Landlord may reasonably impose.

Tenant agrees to provide, within 30 days of request by Landlord, such information and documentation as may be reasonably required for compliance with the City of Cambridge Building Energy Use Disclosure Ordinance, Section 8.67.010 et seq. of the Municipal Code of the City of Cambridge (as the same may be amended, the "**Cambridge Building Energy Use Disclosure Ordinance**"), and other such energy or sustainability requirements as may be adopted by the City of Cambridge or any other Governmental Authority from time to time, which information shall include without limitation information on annual usage at or by the Premises of electricity, natural gas, steam, hot or chilled water or other energy. Landlord shall use commercially reasonable efforts to report to the applicable Governmental Authority such energy usage for the Building and other Building information as required by the Cambridge Building Energy Use Disclosure Ordinance.

8. **Holding Over**. If, with Landlord's express written consent, Tenant retains possession of the Premises after the termination of the Term, (i) unless otherwise agreed in such written consent, such possession shall be subject to immediate termination by Landlord at any time, (ii) all of the other terms and provisions of this Lease (including, without limitation, the adjustment of Base Rent pursuant to Section 4 hereof) shall remain in full force and effect (excluding any expansion or renewal option or other similar right or option) during such holdover period, (iii) Tenant shall continue to pay Base Rent in the amount payable upon the date of the expiration or earlier termination of this Lease or such other amount as Landlord may indicate, in Landlord's sole and absolute discretion, in such written consent, and (iv) all other payments shall continue under the terms of this Lease. If Tenant remains in possession of the Premises after the expiration or earlier termination of the Term without the express written consent of Landlord: (x) Tenant shall become a tenant at sufferance upon the terms of this Lease except that Base Rent shall be equal to 150% of Base Rent in effect during the last 30 days of the Term; and (y) if such holdover exceeds 90 days, Tenant shall be responsible for all damages suffered by Landlord resulting from or occasioned by Tenant's holding over, including consequential damages. No holding over by Tenant, whether with or without consent of Landlord, shall operate to extend this Lease except with Landlord's express written consent, and this Section 8 shall not be construed as consent for Tenant to retain possession of the Premises. Acceptance by Landlord of Rent after the expiration of the Term or earlier termination of this Lease shall not result in a renewal or reinstatement of this Lease.

9. **Taxes**. Landlord shall pay, as part of Operating Expenses, all taxes, levies, fees, assessments and governmental charges of any kind, existing as of the Commencement Date or thereafter enacted (collectively referred to as "**Taxes**"), imposed by any federal, state, regional, municipal, local or other governmental authority or agency, including, without limitation, quasi-public agencies (collectively, "**Governmental Authority**") during the Term, including, without limitation, all Taxes: (i) imposed on or measured by or based, in whole or in part, on rent payable to (or gross receipts received by) Landlord under this Lease and/or from the rental by Landlord of the Project or any portion thereof, or (ii) based on the square footage, assessed value or other measure or evaluation of any kind of the Premises or the Project, or (iii) assessed or imposed by or on the operation or maintenance of any portion of the Premises or the Project, including parking, or (iv) assessed or imposed by, or at the direction of, or resulting from Legal Requirements, or interpretations thereof, promulgated by, any Governmental Authority, or (v) imposed as a license or other fee, charge, tax or assessment on Landlord's business or occupation of leasing space in the Project. Landlord may contest by appropriate legal proceedings the amount, validity, or application of any Taxes or liens securing Taxes. Taxes shall not include any net income taxes imposed on Landlord except to the extent such net income taxes are in substitution for any Taxes payable hereunder, or any franchise, capital stock, gift, estate or inheritance taxes or any federal, state or local documentary taxes imposed against the Project or any portion thereof or interest therein. If any such Tax is levied or assessed directly against Tenant, then Tenant shall be responsible for and shall pay the same at such times and in such manner as the taxing authority shall require. Operating Expenses hereunder shall also include the cost of tax monitoring services provided to Landlord with respect to the Project. Tenant shall pay, prior to delinquency, any and all Taxes levied or assessed against any personal property or trade fixtures placed by Tenant in the Premises, whether levied or assessed against Landlord or Tenant. If any Taxes on Tenant's personal property or trade fixtures are levied against Landlord or Landlord's property, or if the assessed valuation of the Project is increased by a value attributed by the taxing authority to improvements in or alterations to the Premises, whether owned by Landlord or Tenant and whether or not affixed to the real property so as to become a part thereof, higher than the base valuation on which Landlord from time-to-time allocates Taxes to all tenants in the Project, Landlord shall have the right, but not the obligation, to pay such Taxes. The amount of any such payment by Landlord shall constitute Additional Rent due from Tenant to Landlord within thirty (30) days of written demand by Landlord. Landlord represents and warrants that the Project is currently separately assessed for tax purposes from any other buildings or properties in the Campus and that there are no payment-in-lieu-of-taxes or other tax reduction agreements in effect.

10. **Parking.**

(a) **Parking License**. Subject to all matters of record, Force Majeure, a Taking (as defined in Section 19 below) and the exercise by Landlord of its rights hereunder, Tenant shall have an irrevocable license to use 198 spaces in the Garage as of the Post Rent Credit Date, based upon a ratio of 0.9 spaces per 1,000 square feet of "gross floor area" in the

Premises, as defined in the Cambridge Zoning Ordinance ("**Tenant's Pro Rata Share of Parking Spaces**") (i.e., 198 spaces, based upon a "gross floor area" of 219,983 square feet in the Premises as defined in the Cambridge Zoning Ordinance) for use by Tenant, in those areas in the Garage designated for non-reserved parking, subject in each case to Landlord's rules and regulations; provided that Landlord reserves the right to make available up to 25% of Tenant's Pro Rata Share of Parking Spaces in the Garage for use by other parties outside of Business Hours (as hereinafter defined), provided further that Landlord may only make use of the Parking Spaces to the extent they are not in use by Tenant at the time Landlord allows a third party to use them. For the purposes of this Lease, "**Business Hours**" shall mean 7:00 a.m. to 6:00 p.m. Monday through Friday (except for state and national holidays). Landlord shall not be responsible for enforcing Tenant's parking rights against any third parties, including without limitation other tenants of the Project, but upon request of Tenant, Landlord will direct the third-party operator of the Garage to do so.

(b) **Monthly Parking Charge**. Commencing on the Post Rent Credit Date, Tenant shall be obligated to pay, together with Base Rent and Additional Rent for Tenant's Share of Operating Expenses hereunder, in respect of Tenant's Pro Rata Share of Parking Spaces in the Garage, the market rate monthly charge therefor designated by Landlord, adjusted reasonably and no more frequently than at the beginning of each calendar year, based upon the rates charged by comparable parking facilities in the vicinity of the Project.

(c) **PTDM Matters**. Tenant shall, at Tenant's sole expense, for so long as the Parking and Traffic Demand Management Plan dated February 9, 2010 (revised April 15, 2010), as approved by the City of Cambridge on April 22, 2010, including the conditions set forth in such approval (as amended from time to time, the "**PTDM**"), remains applicable to the Project, comply with the PTDM as applicable to the Project, including without limitation, (i) offer to subsidize mass transit monthly passes for all of its employees who work in the Premises in accordance with the terms set forth in the PTDM; (ii) implement a Commuter Choice Program and the MBTA's Corporate Pass Plan; (iii) discourage single-occupant vehicle ("**SOV**") use by its employees; (iv) promote alternative modes of transportation and use of alternative work hours; (v) at Landlord's request, meet with Landlord and/or its representatives no more frequently than quarterly to discuss transportation programs and initiatives; (vi) participate in annual surveys, monitoring transportation programs and initiatives at the Campus, and, without limitation, achieve a sixty (60%) percent response rate for patron surveys; (vii) cooperate with Landlord in connection with transportation programs and initiatives promulgated pursuant to the PTDM; (viii) provide alternative work programs (such as telecommuting, flex-time and compressed work weeks) to its employees in order to reduce traffic impacts in Cambridge during peak commuter hours; (ix) offer an emergency ride home ("**ERH**") through the Charles River Transportation Management Association ("**CRTMA**"), or have its own ERH program, for all employees who commute by non-SOV mode at least 3 days a week and who are eligible to park in Tenant's Share of Garage Spaces; (x) cooperate with the Cambridge Office of Workforce Development to expand employment opportunities for Cambridge residents; (xi) become a member of the CRTMA and cause the EZ Ride shuttle service to service the Building; (xii) in the

event that the single occupancy vehicle and traffic generation modal split limits of the PTDM are exceeded, charge each user of a parking space the market rate for parking in Kendall Square/East Cambridge therefor; (xiii) comply with the requirements of any other Parking and Traffic Demand Management Plan to which Tenant may be a party from time to time; (xiii) designate an employee transportation coordinator for the Building; and (xiv) otherwise cooperate with Landlord in encouraging employees to seek alternate modes of transportation.

11. **Utilities and Services; Generators; Service Interruptions.**

(a) **Utilities and Services**. Landlord shall provide, subject to the terms of this Section 11, water, sewer, steam, heat, ventilation, air conditioning, passenger and service elevator, electricity, gas, refuse and trash collection, and recycling (collectively, "**Utilities**"). Tenant shall be responsible for its own janitorial services within the Premises, and the same shall not be included in Utilities. Landlord agrees to use commercially reasonable efforts to have at least one passenger elevator available for use at all times, except in the event of an emergency. Provided that Tenant is in occupancy of the entire non-retail space in the 60 Binney Building, Landlord agrees to designate the service elevator in the 60 Binney Building for use by only the tenants of the 60 Binney Building (in common with Landlord) with appropriate signage to be provided by Landlord at Tenant's expense (the design and content of which signage shall be mutually acceptable to Landlord and Tenant) at the loading dock level entrance to the service elevator indicating that such service elevator serves only the tenants of the 60 Binney Building and not other tenants of the Building. Landlord shall pay, as Operating Expenses or subject to Tenant's reimbursement obligation, for all Utilities used in the Premises, all maintenance charges for Utilities, and any storm sewer charges or other similar charges for Utilities imposed by any Governmental Authority or Utility provider, and any taxes, penalties, surcharges or similar charges thereon, which charges shall be charged at Landlord's cost without markup. Utility meters (including submeters) shall be installed in accordance with the requirements of the Work Letter. Landlord shall read and maintain the meters as part of its services hereunder, the cost of which shall be included in Operating Expenses. Tenant shall pay directly to the Utility provider, prior to delinquency, any separately metered Utilities and services which may be furnished to Tenant or the Premises during the Term. Tenant shall pay, as part of Operating Expenses, its share of all charges for jointly metered Utilities based upon consumption, as reasonably determined by Landlord. No interruption or failure of Utilities, from any cause whatsoever, shall result in eviction or constructive eviction of Tenant, termination of this Lease or, except as expressly set forth below, the abatement of Rent. Tenant agrees to limit use of water and sewer with respect to Common Areas to normal restroom use.

(b) **Life Safety Generator.** Landlord's sole obligation for either providing a life-safety generator or providing life safety back-up power to Tenant shall be: (i) to provide a life safety generator to the extent required under the Work Letter, and (ii) to contract with a third party to maintain the life safety generator as per the manufacturer's standard maintenance guidelines. Landlord shall have no obligation to provide Tenant with operational life safety generators or back-up power or to supervise, oversee or confirm that the third party maintaining

the life safety generator is maintaining the generator as per the manufacturer's standard guidelines or otherwise; provided, however, Landlord shall meet with Tenant and provide Tenant on a quarterly basis with (a) copies of all maintenance reports/records applicable to the quarter and (b) the then most recent inspection report for the life safety generator. Further, if Tenant provides written notice to Landlord of Tenant's reasonable dissatisfaction with the service provided by the third party maintenance company, Landlord shall within 30 days of such notice, or as soon thereafter as practical, replace said company with another company reasonably satisfactory to Tenant. During any period of replacement, repair or maintenance of the life safety generator when the life safety generator is not operational, including any delays thereto due to the inability to obtain parts or replacement equipment, Landlord shall have no obligation to provide Tenant with an alternative life safety generator or generators or alternative sources of back-up power. Tenant expressly acknowledges and agrees that Landlord does not guaranty that such life safety generator will be operational at all times or that emergency power will be available to the Premises when needed.

(c) **Service Interruptions**.

(i) **Service Interruptions.** If all or a material portion of the Premises is rendered untenantable such that Tenant cannot occupy such portion of the Premises or if the unavailability of access to the Premises renders the Premises untenantable, in either case as a proximate result of Landlord's negligence or willful misconduct, or as a proximate result of Landlord's failure to perform any covenant or provision of this Lease on its part to be performed (except to the extent that such failure is caused in whole or in part by the action or inaction of Tenant) or by reason of the performance of any work in or about the Premises by or on behalf of Landlord, such that the foregoing conditions materially and adversely interfere with the conduct of Tenant's operations in the Premises ("**Material Services Failure**"), then Tenant shall have the rights hereinafter set forth. During such period of Material Services Failure, Landlord shall, if reasonably practical, cooperate with Tenant to arrange for the provision of any interrupted Utilities on an interim basis via temporary measures until final corrective measures can be accomplished. Tenant shall permit Landlord the necessary access to the Premises to remedy such Material Service Failure. In the event a Material Services Failure continues and is not remedied by Landlord within five (5) consecutive days after receiving written notice thereof from Tenant (an "**MSF Notice**") and provided that Tenant has given Landlord all access to the Premises necessary for the remedy of such Material Service Failure, then Tenant shall have the right to an equitable abatement of Base Rent and Tenant's Pro Rata Share of Operating Expenses under this Lease in proportion to the extent of interference with Tenant's operations until the Material Services Failure is remedied.

(ii) **Exclusive Remedies.** This Section 11(c) sets forth Tenant's sole and exclusive remedies on account of an interruption of services or Landlord's default resulting in an interruption of services other than Tenant's self-help rights under Section 31(b). This Section 11(c) shall not apply to casualty or a Taking, which are governed by the terms of Section 18 and Section 19, respectively, nor shall it apply to any failure of a utility or other third

party service provider to provide any utility or service (unless caused by Landlord's negligence or willful misconduct).

(iii) **Nonapplicability to Life Safety Generator.** Notwithstanding any provision hereof to the contrary, this Section 11(c) shall be inapplicable to any life safety generator servicing the Premises or other portions of the Project, which is solely governed by the provisions of Section 11(b) above.

12. **Alterations and Tenant's Property; Cabling and Conduits.** Any alterations, additions, or improvements made to the Premises by or on behalf of Tenant, including additional locks or bolts of any kind or nature upon any doors or windows in the Premises, but excluding installation, removal or realignment of furniture systems (other than removal of furniture systems owned or paid for by Landlord) not involving any modifications to the structure or connections (other than by ordinary plugs or jacks) to Building Systems (as defined in Section 13) ("**Alterations**") and excluding Notice-Only Alterations (as defined below) shall be subject to Landlord's prior written consent, which shall not be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, Landlord shall have the right to disapprove in its sole discretion any proposed Alterations which: (a) affect structure, Common Areas or the exterior of the Building or exterior of the Project; (b) materially and adversely affect Building Systems (as defined in Section 13); (c) affect other tenant space in the Building; (d) are not in conformance with the Special Permit or other Project entitlements; or (e) reduce or enlarge the square footage of the Building ("**Material Alterations**"). Tenant may construct nonstructural Alterations in the Premises without Landlord's prior approval if the individual cost of such work does not exceed $150,000, and if the aggregate cost of all such work in any 12 month period does not exceed $400,000 (a "**Notice-Only Alteration**"), provided Tenant notifies Landlord in writing of such intended Notice-Only Alteration, and such notice shall be accompanied by plans, specifications, work contracts and such other information concerning the nature and cost of the Notice-Only Alteration as may be reasonably requested by Landlord, which notice and accompanying materials shall be delivered to Landlord not less than 15 days in advance of any proposed construction. If Landlord approves any Alterations, Landlord may impose such conditions on Tenant in connection with the commencement, performance and completion of such Alterations as Landlord may deem appropriate in Landlord's reasonable discretion, including without limitation requiring payment by Tenant for the costs of any modifications as may be needed to Building systems in connection with or arising from Tenant's Alterations. Any request for approval shall be in writing, delivered not less than 15 business days in advance of any proposed construction, and accompanied by plans, specifications, bid proposals, work contracts and such other information concerning the nature and cost of the alterations as may be reasonably requested by Landlord, including the identities and mailing addresses of all persons performing work or supplying materials. Landlord's right to review plans and specifications and to monitor construction shall be solely for its own benefit, and Landlord shall have no duty to ensure that such plans and specifications or construction comply with applicable Legal Requirements. Tenant shall cause, at its sole cost and expense, all Alterations to comply with insurance requirements and with Legal Requirements and shall implement at its sole cost

and expense any alteration or modification required by Legal Requirements as a result of any Alterations. Tenant shall pay to Landlord, as Additional Rent, within 30 days after written demand, an amount equal to Landlord's reasonable out-of-pocket third-party expenses for review of Tenant's plans for Alterations. Before Tenant begins any Alteration, Landlord may post on and about the Premises notices of non-responsibility pursuant to applicable law. Tenant shall reimburse Landlord for, and indemnify and hold Landlord harmless from, any expense incurred by Landlord by reason of faulty work done by Tenant or its contractors, delays caused by such work, or inadequate cleanup.

Tenant shall pay for the completion of all Alterations work free and clear of liens, and shall provide (and cause each contractor or subcontractor to provide) certificates of insurance for workers' compensation and other coverage in amounts and from an insurance company satisfactory to Landlord protecting Landlord against liability for personal injury or property damage during construction. Upon completion of any Alterations, Tenant shall deliver to Landlord: (i) sworn statements setting forth the names of all contractors and subcontractors who did the work and final lien waivers from all such contractors and subcontractors; and (ii) "**as built**" plans for any such Alteration, including all plans and information necessary to incorporate the as built plans into the Project's Building Information Management system (except for decorative work or other cosmetic Alterations, as to which "**as built**" plans shall not be required).

Other than: (i) the items, if any, listed on **Exhibit F** hereto; (ii) any items agreed by Landlord in writing to be included on **Exhibit F** in the future; and (iii) any trade fixtures, machinery, equipment and other personal property not paid for out of the TI Fund (as defined in the Work Letter) which may be removed without material damage to the Premises, which damage shall be repaired (including capping or terminating utility hook-ups behind walls) by Tenant during the Term (collectively, " **Tenant's Property**"), all property of any kind paid for with the TI Allowance (as defined in the Work Letter), all Alterations, real property fixtures, built-in machinery and equipment, built-in casework and cabinets and other similar additions and improvements built into the Premises so as to become an integral part of the Premises, such as fume hoods which penetrate the roof or plenum area, built-in cold rooms, built-in warm rooms, walk-in cold rooms, walk-in warm rooms, deionized water systems, glass washing equipment, autoclaves, chillers, built-in plumbing, electrical and mechanical equipment and systems, and any power generator and transfer switch (collectively, "**Installations**") shall be and shall remain the property of Landlord during the Term and following the expiration or earlier termination of the Term, shall not be removed by Tenant at any time during the Term and shall remain upon and be surrendered with the Premises as a part thereof in accordance with Section 28 following the expiration or earlier termination of this Lease. If Landlord so elects, Tenant shall remove such Installation upon the expiration or earlier termination of this Lease and restore any damage caused by or occasioned as a result of such removal, including, when removing any of Tenant's Property which was plumbed, wired or otherwise connected to any of the Building Systems, capping off all such connections behind the walls of the Premises and repairing any holes. During any such restoration period, Tenant shall pay Rent to Landlord as provided herein as if

said space were otherwise occupied by Tenant. Notwithstanding the foregoing, (A) the removal of Alterations, including Installations, shall not be required, except for the following, provided that Landlord has given Tenant notice of such requirement to remove at the time Landlord approves any such Alteration or Installation: (v) any of the improvements listed on **Exhibit F-1**; (w) Alterations or Installations that included changes or penetrations to floor slabs and other structural elements of the Building, such as for connecting stairs within the Premises, if any; (x) Alterations not typically found in a Class A office or laboratory premises; (y) Alterations installed without Landlord's consent which require Landlord's consent under this Lease; and (z) Material Alterations, as to which Landlord may condition its approval of the same upon removal of such Material Alteration (Items listed in v, w, x, y and z above shall be referred to as "**Removables**"); and (B) Landlord agrees that Tenant shall not be obligated to remove (aa) the Tenant Improvements installed under the terms of the Work Letter at the end of the Term, unless listed on **Exhibit F-1**, otherwise expressly required under the terms of this Lease or provided in the TI Construction Documents (as defined in the Work Letter); or (bb) its computer, security, and telecommunications wiring and cable and other related wiring, unless required by any national, Massachusetts, or local code, which codes also prohibit agreement between these parties, contrary to such removal requirements.

Landlord agrees that Tenant shall not be charged a usage fee for running of any cables or fiber optics in then existing common Building conduits for the purpose of connectivity to the Premises from Tenant's carriers that need to bring circuits from outside the Building to the Premises utilizing then existing common Building conduits. Upon request of Tenant, Landlord shall provide documentation of the main demarcation, telecommunications, fiber and power feeds to the Building and Premises.

13. **Landlord's Repairs.** Landlord, as an Operating Expense, but subject to the provisions of Section 5, shall maintain all of the structural, exterior, and other Common Areas of the Project, including HVAC, plumbing, fire sprinklers, elevators and all other building systems serving the Premises and other portions of the Project ("**Building Systems**"), in good operating condition and repair consistent with comparable first-class mixed-use office and lab buildings in Cambridge, Massachusetts, reasonable wear and tear and damages caused by Tenant, or by any of Tenant's agents, servants, employees, invitees and contractors (collectively, "**Tenant Parties**") excluded. Losses and damages caused by Tenant or any Tenant Party shall be repaired by Landlord, to the extent not covered by insurance, at Tenant's sole cost and expense. Landlord reserves the right to stop Building Systems services when necessary (i) by reason of accident or emergency, or (ii) for planned repairs, alterations or improvements, which are, in the judgment of Landlord, desirable or necessary to be made, until said repairs, alterations or improvements shall have been completed. Landlord shall have no responsibility or liability for failure to supply Building Systems services during any such period of interruption; provided, however, that Landlord shall, except in case of emergency, provide Tenant at least 48 hours advance notice of any planned stoppage of Building Systems services for routine maintenance, repairs, alterations or improvements and shall use reasonable efforts to coordinate such interruption with Tenant so as to minimize adverse effect on Tenant's use of or

access to the Premises. Tenant shall promptly give Landlord written notice of any repair required by Landlord pursuant to this Section, after which Landlord shall have a reasonable opportunity to effect such repair. Landlord shall not be liable for any failure to make any repairs or to perform any maintenance unless such failure shall persist for an unreasonable time after Tenant's written notice of the need for such repairs or maintenance. Tenant waives its rights under any state or local law to terminate this Lease or to make such repairs at Landlord's expense and agrees that the parties' respective rights with respect to such matters shall be solely as set forth herein. Repairs required as the result of fire, earthquake, flood, vandalism, war, or similar cause of damage or destruction shall be controlled by Section 18.

14. **Tenant's Repairs**. Subject to Section 13 hereof, Tenant, at its expense, shall repair, replace and maintain in good condition all portions of the Premises, including, without limitation, entries, doors, ceilings, interior windows, interior walls, and the interior side of demising walls, (other than portions of Building Systems or the structure of the Building within the Premises and required to be maintained by Landlord pursuant to Section 13). Such repair and replacement may include capital expenditures and repairs whose benefit may extend beyond the Term. Should Tenant fail to make any such repair or replacement or fail to maintain the Premises, Landlord shall give Tenant written notice of such failure. If Tenant fails to commence cure of such failure within 10 business days of Landlord's written notice, and thereafter diligently prosecute such cure to completion, Landlord may perform such work and shall be reimbursed by Tenant within 20 days after demand therefor; provided, however, that if such failure by Tenant creates or could create an emergency, Landlord may immediately commence cure of such failure and shall thereafter be entitled to recover the costs of such cure from Tenant. Subject to Sections 17 and 18, Tenant shall bear the full uninsured cost of any repair or replacement to any part of the Project that results from damage caused by the negligence or willful misconduct of Tenant or any Tenant Party or the failure of Tenant to perform its obligations under this Lease.

15. **Mechanic's Liens.** Tenant shall discharge, by bond or otherwise, any mechanic's lien filed against the Premises or against the Project for work claimed to have been done for, or materials claimed to have been furnished to, Tenant within 10 business days after written notice of the filing thereof, at Tenant's sole cost and shall otherwise keep the Premises and the Project free from any liens arising out of work performed, materials furnished or obligations incurred by Tenant. Should Tenant fail to discharge any lien described herein, Landlord shall have the right, but not the obligation, to pay such claim or post a bond or otherwise provide security to eliminate the lien as a claim against title to the Project and the cost thereof shall be immediately due from Tenant as Additional Rent. If Tenant shall lease or finance the acquisition of office equipment, furnishings, or other personal property of a removable nature utilized by Tenant in the operation of Tenant's business, Tenant warrants that any Uniform Commercial Code Financing Statement filed as a matter of public record by any lessor or creditor of Tenant will upon its face or by exhibit thereto indicate that such Financing Statement is applicable only to removable personal property of Tenant located within the Premises. In no event shall the address of the Project be furnished on the statement without

qualifying language as to applicability of the lien only to removable personal property, located in an identified suite held by Tenant.

16. **Indemnification.**

(a) **Tenant.** Subject to Section 16(c) and Section 17(c), Tenant hereby indemnifies and agrees to defend, save and hold Landlord and Landlord's officers, directors, partners, members, managers, agents and holders of Mortgages as to which Landlord has given Tenant notice ("**Landlord Indemnified Parties**") harmless from and against any and all Claims for injury or death to persons or damage to property (i) occurring within the Premises, (ii) occurring outside of the Premises, to the extent caused by the negligence or willful misconduct of Tenant or any Tenant Party, (iii) to the extent arising out of the use or occupancy of the Premises by Tenant or any Tenant Party, or (iv) occasioned by a breach or default by Tenant in the performance of any of its obligations hereunder, except, in any event, to the extent caused by the willful misconduct, negligence or default of Landlord or a Landlord Party. Except as set forth in Section 16(b) below and subject to Section 16(c), Section 17(c) and Section 36, Landlord shall not be liable to Tenant for, and Tenant assumes all risk of damage to, personal property (including, without limitation, loss of records kept within the Premises). Tenant further hereby irrevocably waives any and all Claims for injury to Tenant's business or loss of income relating to any such damage or destruction of personal property (including, without limitation, any loss of records). Landlord shall not be liable for any damages arising from any act, omission or neglect of any other tenant in the Project or of any other third party.

(b) **Landlord.** Subject to Section 16(c), Section 17(c), and Section 36, Landlord hereby indemnifies and agrees to defend, save and hold Tenant and Tenant's officers, directors, partners, members, and agents (" **Tenant Indemnified Parties**") harmless from and against any and all Claims for injury or death to persons or damage to property to the extent caused by the negligence or willful misconduct of Landlord or any Landlord Party.

(c) **M.G.L. Chapter 186, Section 15.** In the event that any provision of this Lease expressly conflicts with the requirements of M.G.L. Chapter 186, Section 15, the provisions of said statute shall govern to the extent of such conflict (Landlord hereby agreeing that, for the purposes of said Section 15, the term "Landlord" shall be deemed to include all "**Landlord Parties**"), provided, however, that the parties expressly covenant and agree that in no event shall either party hereunder be liable in any event for consequential, indirect or punitive damages (Tenant agreeing that, without limitation of the provisions of Section 36 below, the results of Tenant's scientific research and scientific experiments, as well as any income arising therefrom shall be considered to be consequential damages).

17. **Insurance**.

(a) **Landlord's Insurance.** Landlord shall maintain all risk property and, if applicable, sprinkler damage insurance covering the full replacement cost of the Project or such

lesser coverage amount as Landlord may elect provided such coverage amount is not less than 90% of such full replacement cost. Landlord shall further procure and maintain commercial general liability insurance with a single loss limit of not less than $2,000,000 for bodily injury and property damage with respect to the Project. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary, including, but not limited to, flood, environmental hazard and earthquake, loss or failure of building equipment, errors and omissions, rental loss during the period of repair or rebuilding, workers' compensation insurance and fidelity bonds for employees employed to perform services and insurance for any improvements installed by Tenant or which are in addition to the standard improvements customarily furnished by Landlord without regard to whether or not such are made a part of the Project. All such insurance shall be included as part of the Operating Expenses. The Project may be included in a blanket policy (in which case the cost of such insurance allocable to the Project will be determined by Landlord based upon the insurer's cost calculations). Tenant shall also reimburse Landlord for any increased premiums or additional insurance which Landlord reasonably deems necessary as a result of Tenant's use of the Premises.

(b) **Tenant's Insurance.** Tenant, at its sole cost and expense, shall maintain during the Term: all risk property insurance with business interruption and extra expense coverage, covering the full replacement cost of all property and improvements installed or placed in the Premises by Tenant at Tenant's expense; workers' compensation insurance with no less than the minimum limits required by law; employer's liability insurance with such limits as required by law; commercial general liability insurance, with a minimum limit of not less than $2,000,000 per occurrence for bodily injury and property damage with respect to the Premises. The commercial general liability insurance policy shall name Landlord, its officers, directors, employees, managers, agents and Alexandria Real Estate Equities, L.P. (collectively, "**Landlord Parties**"), as additional insureds. The commercial general liability insurance policy shall insure on an occurrence and not a claims-made basis; shall be issued by insurance companies which have a rating of not less than policyholder rating of A and financial category rating of at least Class X in "**Best's Insurance Guide**"; shall not be cancelable for nonpayment of premium unless 30 days prior written notice shall have been given to Landlord from the insurer; shall contain coverage for hostile fire and contractual liability; and provide primary coverage to Landlord (any policy issued to Landlord providing duplicate or similar coverage shall be deemed excess over Tenant's policies). Copies of such policies (if requested by Landlord), or certificates of insurance showing the limits of coverage required hereunder and showing Landlord as an additional insured, along with reasonable evidence of the payment of premiums for the applicable period, shall be delivered to Landlord by Tenant upon commencement of the Term and upon each renewal of said insurance. Tenant's policy may be a "**blanket policy**" with an aggregate per location endorsement which specifically provides that the amount of insurance shall not be prejudiced by other losses covered by the policy. Tenant shall provide Landlord with renewal certificates prior to the expiration of such policies.

In each instance where insurance is to name Landlord as an additional insured, Tenant shall upon written request of Landlord also designate and furnish certificates so evidencing Landlord as additional insured to: (i) any lender of Landlord holding a security interest in the Project or any portion thereof, (ii) the landlord under any lease wherein Landlord is tenant of the real property on which the Project is located, if the interest of Landlord is or shall become that of a tenant under a ground or other underlying lease rather than that of a fee owner, and/or (iii) any management company retained by Landlord to manage the Project.

(c) **Waiver of Subrogation.** The property insurance obtained by Landlord and Tenant shall include a waiver of subrogation by the insurers and all rights based upon an assignment from its insured, against Landlord or Tenant, and their respective officers, directors, employees, managers, agents, invitees and contractors ("**Related Parties**"), in connection with any loss or damage thereby insured against. Neither party nor its respective Related Parties shall be liable to the other for loss or damage caused by any risk insured against under property insurance required to be maintained hereunder, and each party waives any claims against the other party, and its respective Related Parties, for such loss or damage. The failure of a party to insure its property shall not void this waiver. Landlord and its respective Related Parties shall not be liable for, and Tenant hereby waives all claims against such parties for, business interruption and losses occasioned thereby sustained by Tenant or any person claiming through Tenant resulting from any accident or occurrence in or upon the Premises or the Project from any cause whatsoever. If the foregoing waivers shall contravene any law with respect to exculpatory agreements, the liability of Landlord or Tenant shall be deemed not released but shall be secondary to the other's insurer.

(d) **Increases in Tenant's Liability Insurance Coverages.** Landlord may require insurance policy limits to be raised to conform with requirements of Landlord's lender and/or to bring coverage limits to levels then being generally required of new tenants within the Project; provided, however, (i) in no event shall such insurance requirements be increased more frequently than once in any 3-year period, and (ii) such increase is applied consistently with all non-retail tenants of the Project.

18. **Restoration.** If, at any time during the Term, the Project or the Premises are damaged or destroyed by a fire or other insured casualty, Landlord shall notify Tenant within 60 days after discovery of such damage as to the amount of time Landlord reasonably estimates it will take to restore the Project or the Premises, as applicable (the "**Restoration Period**"). If the Restoration Period is estimated to exceed 18 months (the "**Maximum Restoration Period**"), Landlord may, in such notice, elect to terminate this Lease as of the date that is 75 days after the date of discovery of such damage or destruction; provided, however, that notwithstanding Landlord's election to restore, Tenant may elect to terminate this Lease by written notice to Landlord delivered within 10 business days of receipt of a notice from Landlord estimating a Restoration Period for the Premises longer than the Maximum Restoration Period. Unless either Landlord or Tenant so elects to terminate this Lease, Landlord shall, subject to receipt of sufficient insurance proceeds (with any deductible to be treated as a current Operating

Expense), promptly restore the Premises (excluding the improvements installed by Tenant or by Landlord and paid for by Tenant unless covered by the insurance Landlord maintains as an Operating Expense hereunder, in which case such improvements shall be included, to the extent of such insurance proceeds, in Landlord's restoration), subject to delays arising from the collection of insurance proceeds, from Force Majeure events or as needed to obtain any license, clearance or other authorization of any kind required to enter into and restore the Premises issued by any Governmental Authority having jurisdiction over the use, storage, handling, treatment, generation, release, disposal, removal or remediation of Hazardous Materials (as defined in Section 30) in, on or about the Premises (collectively referred to herein as "**Hazardous Materials Clearances**"); provided, however, that if repair or restoration of the Premises is not substantially complete as of the end of the Maximum Restoration Period or, if longer, the Restoration Period, Landlord may, in its sole and absolute discretion, elect not to proceed with such repair and restoration or Tenant may by written notice to Landlord delivered within 10 business days of the expiration of the Maximum Restoration Period or, if longer, the Restoration Period, elect to terminate this Lease, in which event Landlord shall be relieved of its obligation to make such repairs or restoration and this Lease shall terminate as of the date that is 75 days after the later of: (i) discovery of such damage or destruction, or (ii) the date all required Hazardous Materials Clearances are obtained, but Landlord shall retain any Rent paid and the right to any Rent payable by Tenant prior to such election by Landlord or Tenant.

Tenant, at its expense, shall promptly perform, subject to delays arising from the collection of insurance proceeds, from Force Majeure (as defined in Section 34) events or to obtain Hazardous Material Clearances, all repairs or restoration not required to be done by Landlord and shall promptly re-enter the Premises and commence doing business in accordance with this Lease. Notwithstanding the foregoing, either party may terminate this Lease if the Premises are damaged during the last 1 year of the Term and Landlord reasonably estimates that it will take more than 2 months to repair such damage, or if insurance proceeds are not available for such restoration. Rent shall be abated from the date of the casualty, provided that if Hazardous Materials Clearances are required as a condition for the repair or restoration Rent shall be abated from the date all required Hazardous Material Clearances are obtained, until the Premises are repaired and restored, in the proportion which the area of the Premises, if any, which is not usable by Tenant bears to the total area of the Premises, unless Landlord provides Tenant with other space during the period of repair that is suitable for the temporary conduct of Tenant's business. Such abatement shall be the sole remedy of Tenant, and except as provided in this Section 18, Tenant waives any right to terminate the Lease by reason of damage or casualty loss.

The provisions of this Lease, including this Section 18, constitute an express agreement between Landlord and Tenant with respect to any and all damage to, or destruction of, all or any part of the Premises, or any other portion of the Project, and any statute or regulation which is now or may hereafter be in effect shall have no application to this Lease or any damage or destruction to all or any part of the Premises or any other portion of the Project, the parties

hereto expressly agreeing that this Section 18 sets forth their entire understanding and agreement with respect to such matters.

19. **Condemnation.** If the whole or any material part of the Premises or access thereto or the Project is taken for any public or quasi-public use under governmental law, ordinance, or regulation, or by right of eminent domain, or by private purchase in lieu thereof (a "**Taking**" or "**Taken**"), and the Taking would either prevent or materially interfere with Tenant's use of the Premises or materially interfere with or impair Landlord's ownership or operation of the Project, then upon written notice by either party this Lease shall terminate and Rent shall be apportioned as of said date. If part of the Premises or access thereto or the Project shall be Taken, and this Lease is not terminated as provided above, Landlord shall promptly restore the Premises and the Project as nearly as is commercially reasonable under the circumstances to their condition prior to such partial Taking and the rentable square footage of the Building, the rentable square footage of the Premises, Tenant's Share of Operating Expenses and the Rent payable hereunder during the unexpired Term shall be reduced to such extent as may be fair and reasonable under the circumstances. Upon any such Taking, Landlord shall be entitled to receive the entire price or award from any such Taking without any payment to Tenant, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant shall have the right, to the extent that same shall not diminish Landlord's award, to make a separate claim against the condemning authority (but not Landlord) for such compensation as may be separately awarded or recoverable by Tenant for moving expenses and damage to Tenant's trade fixtures, if a separate award for such items is made to Tenant. Tenant hereby waives any and all rights it might otherwise have pursuant to any provision of state law to terminate this Lease upon a partial Taking of the Premises or the Project.

20. **Events of Default.** Each of the following events shall be a default ("**Default**") by Tenant under this Lease:

(a) **Payment Defaults.** Tenant shall fail to pay any installment of Base Rent or Tenant shall fail to pay any installment of regularly schedule Operating Expenses when due; provided, however, that Landlord will give Tenant notice and an opportunity to cure any such failure within 5 business days of any such notice not more than twice in any 12 month period; or Tenant shall fail to pay any other Rent when due; provided that Landlord will give Tenant notice and an opportunity to cure any such failure within 10 business days of any such notice. All notices under this clause (a) shall be in lieu of, and not in addition to, or shall be deemed to be, any notice required by law.

(b) **Insurance.** Any insurance required to be maintained by Tenant pursuant to this Lease shall be canceled or terminated or shall expire or shall be reduced or materially changed in a manner so that it does not comply with the terms of this Lease, or Landlord shall receive a notice of nonrenewal of any such insurance and Tenant shall fail to obtain replacement insurance at least 20 days before the expiration of the current coverage.

(c) **Abandonment.** Tenant shall abandon the Premises, provided, however, that Tenant shall be deemed not to have abandoned the Premises if: (i) prior to vacating the Premises Tenant provides Landlord with prior notice and complies with the requirements pertaining to a Surrender Plan as set forth in Section 28, (ii) prior to or at the time of vacating the Premises, Tenant has made reasonable arrangements for the security of the Premises for the balance of the Term and notified Landlord of such arrangements, (iii) Tenant continues to maintain in force any permits and approvals as may be required by any Governmental Authority for the Premises, and (iv) Tenant continues during the balance of the Term to satisfy all of its obligations under the Lease as they come due, including without limitation the obligation to pay Rent.

(d) **Improper Transfer.** Tenant shall assign, sublease or otherwise transfer or attempt to transfer all or any portion of Tenant's interest in this Lease or the Premises except as expressly permitted herein, or Tenant's interest in this Lease shall be attached, executed upon, or otherwise judicially seized and such action is not released within 90 days of the action.

(e) **Liens.** Tenant shall fail to discharge or otherwise obtain the release of any lien placed upon the Premises in violation of this Lease within the time period as set forth in Section 15 of this Lease.

(f) **Insolvency Events.** Tenant or any guarantor or surety of Tenant's obligations hereunder shall: (A) make a general assignment for the benefit of creditors; (B) commence any case, proceeding or other action seeking to have an order for relief entered on its behalf as a debtor or to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, liquidation, dissolution or composition of it or its debts or seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or of any substantial part of its property (collectively a "**Proceeding for Relief**"); (C) become the subject of any Proceeding for Relief which is not dismissed within 90 days of its filing or entry; or (D) die or suffer a legal disability (if Tenant, guarantor, or surety is an individual) or be dissolved or otherwise fail to maintain its legal existence (if Tenant, guarantor or surety is a corporation, partnership or other entity).

(g) **Estoppel Certificate or Subordination Agreement.** Tenant fails to execute any document required from Tenant under Sections 23 or 27 within 5 business days after a second notice requesting such document.

(h) **Other Defaults.** Tenant shall fail to comply with any provision of this Lease other than those specifically referred to in this Section 20, and, except as otherwise expressly provided herein, such failure shall continue for a period of 30 days after written notice thereof from Landlord to Tenant.

Any notice given under Section 20(h) hereof shall: (i) specify the alleged default, (ii) demand that Tenant cure such default, (iii) be in lieu of, and not in addition to, or shall be deemed to be,

any notice required under any provision of applicable law, and (iv) not be deemed a forfeiture or a termination of this Lease unless Landlord elects otherwise in such notice; provided that if the nature of Tenant's default pursuant to Section 20(h) is such that it cannot be cured by the payment of money and reasonably requires more than 30 days to cure, then Tenant shall not be deemed to be in default if Tenant commences such cure within said 30 day period and thereafter diligently prosecutes the same to completion; provided, however, that such cure shall be completed no later than 90 days from the date of Landlord's notice.

21. **Landlord's Remedies.**

(a) **Payment By Landlord; Interest.** Upon a Default by Tenant hereunder, Landlord may, without waiving or releasing any obligation of Tenant hereunder, make such payment or perform such act. All sums so paid or incurred by Landlord, together with interest thereon, from the date such sums were paid or incurred, at the annual rate equal to the prime rate of interest published from time to time by The Wall Street Journal plus 4%, or the highest rate permitted by law (the "**Default Rate**"), whichever is less, shall be payable to Landlord on demand as Additional Rent. Nothing herein shall be construed to create or impose a duty on Landlord to mitigate any damages resulting from Tenant's Default hereunder.

(b) **Late Payment Rent.** Late payment by Tenant to Landlord of Rent and other sums due will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult and impracticable to ascertain. Such costs include, but are not limited to, processing and accounting charges and late charges which may be imposed on Landlord under any Mortgage covering the Premises. Therefore, if any installment of Rent due from Tenant is not received by Landlord within 5 days after the date such payment is due, Tenant shall pay to Landlord an additional sum equal to 5% of the overdue Rent as a late charge. The parties agree that this late charge represents a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant. In addition to the late charge, Rent not paid when due shall bear interest at the Default Rate from the 5th day after the date due until paid. Landlord agrees to waive such late charge and such interest one time in any twelve month period, provided that the late payment is made within 5 business days of Landlord's notice demanding payment.

(c) **Remedies.** Upon the occurrence of a Default, Landlord, at its option, without further notice or demand to Tenant, shall have in addition to all other rights and remedies provided in this Lease, at law or in equity, the option to pursue any one or more of the following remedies, each and all of which shall be cumulative and nonexclusive, without any notice or demand whatsoever. No cure in whole or in part of such Default by Tenant after Landlord has taken any action beyond giving Tenant notice of such Default to pursue any remedy provided for herein (including retaining counsel to file an action or otherwise pursue any remedies) shall in any way affect Landlord's right to pursue such remedy or any other remedy provided Landlord herein or under law or in equity, unless Landlord, in its sole discretion, elects to waive such Default.

(i) This Lease and the Term and estate hereby granted are subject to the limitation that whenever a Default shall have happened and be continuing, Landlord shall have the right, at its election, then or thereafter while any such Default shall continue and notwithstanding the fact that Landlord may have some other remedy hereunder or at law or in equity, to give Tenant written notice of Landlord's intention to terminate this Lease on a date specified in such notice, which date shall be not less than 5 days after the giving of such notice, and upon the date so specified, this Lease and the estate hereby granted shall expire and terminate with the same force and effect as if the date specified in such notice were the date hereinbefore fixed for the expiration of this Lease, and all right of Tenant hereunder shall expire and terminate, and Tenant shall be liable as hereinafter in this Section 21(c) provided. If any such notice is given, Landlord shall have, on such date so specified, the right of re-entry and possession of the Premises and the right to remove all persons and property therefrom and to store such property in a warehouse or elsewhere at the risk and expense, and for the account, of Tenant. Should Landlord elect to re-enter as herein provided or should Landlord take possession pursuant to legal proceedings or pursuant to any notice provided for by law, Landlord may from time to time re-let the Premises or any part thereof for such term or terms and at such rental or rentals and upon such terms and conditions as Landlord may deem advisable, with the right to make commercially reasonable alterations in and repairs to the Premises. Landlord shall be deemed to have satisfied any obligation to mitigate its damages by hiring an experienced commercial real estate broker and directing such broker to actively market the Premises to prospective tenants.

(ii) In the event of any termination of this Lease as in this Section 21 provided or as required or permitted by law or in equity, Tenant shall forthwith quit and surrender the Premises to Landlord, and Landlord may, without further notice, enter upon, re-enter, possess and repossess the same by summary proceedings, ejectment or otherwise, and again have, repossess and enjoy the same as if this Lease had not been made, and in any such event Tenant and no person claiming through or under Tenant by virtue of any law or an order of any court shall be entitled to possession or to remain in possession of the Premises. Landlord, at its option, notwithstanding any other provision of this Lease, shall be entitled to recover from Tenant, as and for liquidated damages, the sum of:

(A) all Base Rent, Additional Rent and other amounts payable by Tenant hereunder then due or accrued and unpaid: and

(B) the amount equal to the aggregate of all unpaid Base Rent and Additional Rent which would have been payable if this Lease had not been terminated prior to the end of the Term then in effect, discounted to its then present value in accordance with accepted financial practice using a rate of 5% per annum, for loss of the bargain; and

(C) all other damages and expenses (including reasonable out-of-pocket attorneys' fees and expenses), if any, which Landlord shall have sustained by reason of the breach of any provision of this Lease; less

(D) the net proceeds of any re-letting actually received by Landlord and the amount of damages which Tenant proves could have been avoided had Landlord taken reasonable steps to mitigate its damages.

(iii) Nothing herein contained shall limit or prejudice the right of Landlord, in any bankruptcy or insolvency proceeding, to prove for and obtain as liquidated damages by reason of such termination an amount equal to the maximum allowed by any bankruptcy or insolvency proceedings, or to prove for and obtain as liquidated damages by reason of such termination, an amount equal to the maximum allowed by any statute or rule of law, whether such amount shall be greater or less than the excess referred to above.

(iv) Nothing in this Section 21 shall be deemed to affect the right of either party to indemnifications pursuant to this Lease.

(v) If Landlord terminates this Lease upon the occurrence of a Default, Tenant will quit and surrender the Premises to Landlord or its agents, and Landlord may, without further notice, enter upon, re-enter and repossess the Premises by summary proceedings, ejectment or otherwise. The words "**enter**", "**re-enter**", and "**re-entry**" are not restricted to their technical legal meanings.

(vi) If either party shall be in default in the observance or performance of any provision of this Lease, and an action shall be brought for the enforcement thereof in which it shall be determined that such party was in default, the party in default shall pay to the other party all fees, costs and other expenses which may become payable as a result thereof or in connection therewith, including attorneys' fees and expenses.

(vii) If Tenant shall default in the keeping, observance or performance of any covenant, agreement, term, provision or condition herein contained, Landlord, without thereby waiving such default, may perform the same for the account and at the expense of Tenant (a) immediately or at any time thereafter and without notice in the case of emergency or in case such default will result in a violation of any legal or insurance requirements, and (b) in any other case if such default continues after any applicable notice and cure period provided in Section 21. All reasonable costs and expenses incurred by Landlord in connection with any such performance by it for the account of Tenant and also all reasonable third party costs and expenses, including attorneys' fees and disbursements incurred by Landlord in any action or proceeding (including any summary dispossess proceeding) brought by Landlord to enforce any obligation of Tenant under this Lease and/or right of Landlord in or to the Premises, shall be paid by Tenant to Landlord within 10 days after demand.

(viii) Independent of the exercise of any other remedy of Landlord hereunder or under applicable law, Landlord may conduct an environmental test of the Premises as generally described in Section 30(c), at Tenant's expense.

(ix) In the event that Tenant is in breach or Default under this Lease, whether or not Landlord exercises its right to terminate or any other remedy, Tenant shall reimburse Landlord within 10 business days of written demand for any third party costs and expenses that Landlord may incur in connection with any such breach or Default, as provided in this Section 21(c). Such costs shall include legal fees and costs incurred for the negotiation of a settlement, enforcement of rights or otherwise. Tenant shall also indemnify Landlord against and hold Landlord harmless from all costs, expenses, demands and liability, including without limitation, legal fees and costs Landlord shall incur if Landlord shall become or be made a party to any claim or action instituted by Tenant against any third party, or by any third party against Tenant, or by or against any person holding any interest under or using the Premises by license of or agreement with Tenant.

(x) Except as otherwise provided in this Section 21, no right or remedy herein conferred upon or reserved to Landlord is intended to be exclusive of any other right or remedy, and every right and remedy shall be cumulative and in addition to any other legal or equitable right or remedy given hereunder, or now or hereafter existing. No waiver of any provision of this Lease shall be deemed to have been made unless expressly so made in writing. Landlord shall be entitled, to the extent permitted by law, to seek injunctive relief in case of the violation, or attempted or threatened violation, of any provision of this Lease, or to seek a decree compelling observance or performance of any provision of this Lease, or to seek any other legal or equitable remedy.

22. **Assignment and Subletting.**

(a) **General Prohibition**. Without Landlord's prior written consent, subject to and on the conditions described in this Section 22, Tenant shall not, directly or indirectly, voluntarily or by operation of law, assign this Lease or sublease the Premises or any part thereof or mortgage, pledge, or hypothecate its leasehold interest or grant any concession or license within the Premises, and any attempt to do any of the foregoing shall be void and of no effect. If Tenant is a corporation, partnership or limited liability company, the shares or other ownership interests thereof which are not actively traded upon a stock exchange or in the over-the-counter market, a transfer or series of transfers whereby 50% or more of the issued and outstanding shares or other ownership interests of such corporation are, or voting control is, transferred (but excepting transfers upon deaths of individual owners) from a person or persons or entity or entities which were owners thereof at time of execution of this Lease to persons or entities who were not owners of shares or other ownership interests of the corporation, partnership or limited liability company at time of execution of this Lease, shall be deemed an assignment of this Lease requiring the consent of Landlord as provided. Notwithstanding anything in this Section 22 to the contrary, any public offering of shares or other ownership interest in Tenant shall not be deemed an assignment. There shall be no assignment or subletting of parking rights except in connection with an assignment or sublease permitted under this Lease.

(b) **Permitted Transfers**.

(i) **Permitted Transfers Generally**. If Tenant desires to assign, sublease, hypothecate or otherwise transfer this Lease, or sublet the Premises or a portion thereof, other than pursuant to a Permitted Assignment (as defined below) or a sublease to an Affiliate (as defined below), then at least 15 days, but not more than 45 days, before the date Tenant desires the assignment or sublease to be effective (the "**Assignment Date**"), Tenant shall give Landlord a notice (the "**Assignment Notice**") containing such information about the proposed assignee or sublessee, including the proposed use of the Premises and any Hazardous Materials proposed to be used, stored handled, treated, generated in or released or disposed of from the Premises, the Assignment Date, any relationship between Tenant and the proposed assignee or sublessee, and all material terms and conditions of the proposed assignment or sublease, including a copy of any proposed assignment or sublease in its final form, and such other information as Landlord may deem reasonably necessary or appropriate to its consideration whether to grant its consent. Landlord may, by giving written notice to Tenant within 15 business days after receipt of the Assignment Notice: (i) grant such consent, (ii) refuse such consent, in its reasonable discretion (provided that it shall be reasonable for Landlord to withhold its consent based upon the financial condition of the assignee or sublessee and the engagement by such party in areas of controversial science, and provided further that Landlord shall have the right to review and approve or disapprove the proposed form of sublease prior to the effective date of any such subletting), or (iii) terminate this Lease, in the case of a proposed assignment, or (iv) in the case of a sublease having a term for the remainder of the Term, terminate the Lease with respect to the subleased Premises, for the remaining Term of this Lease (an "**Assignment Termination**"). If Landlord delivers notice of its election to exercise an Assignment Termination, Tenant shall have the right to withdraw such Assignment Notice by written notice to Landlord of such election within 5 business days after Landlord's notice electing to exercise the Assignment Termination. If Tenant withdraws such Assignment Notice, this Lease shall continue in full force and effect. If Tenant does not withdraw such Assignment Notice, this Lease, and the term and estate herein granted, shall terminate as of the Assignment Date with respect to the space described in such Assignment Notice, and in the event of an Assignment Termination with respect to only a portion of the Premises, such portion of the Premises shall be delivered to Landlord on the date specified in good order and condition in the manner provided in this Lease, including without limitation the provisions of Section 28, and thereafter, to the extent necessary in Landlord's judgment, Landlord, at its own cost and expense, may have access to and may make modifications to the Premises and such portion so as to make such portion a self-contained rental unit with access to Common Areas, elevators and the like. Base Rent, Rentable Area of Premises, Tenant's Share of Operating Expense for the Project, the number of parking spaces licensed hereunder, Tenant's Share of Operating Expenses for the Garage and Tenant's Share of 60 Binney Operating Expenses shall be adjusted according to the extent of the Premises for which the Lease is so terminated. No failure of Landlord to exercise any such option to terminate this Lease, or to deliver a timely notice in response to the Assignment Notice, shall be deemed to be Landlord's consent to the proposed assignment, sublease or other transfer. Tenant shall

reimburse Landlord for all of Landlord's reasonable out-of-pocket expenses in connection with its consideration of any Assignment Notice.

(ii) **Limitation on Subletting**. Notwithstanding the provisions of clause (i) above, during the period which expires on the earlier to occur of (x) 15 months after the Execution Date; or (y) the date by which Landlord and its affiliate have executed leases for all of the rentable space within the Project and the building at 100 Binney Street, Cambridge, Massachusetts ("**Lockout Period**"), the right of Tenant to sublet the Premises on the terms set forth in the foregoing clause (i) shall be limited to the subleasing of up to 2 floors of the Premises for a term or terms of no more than 4 years (without rights of extension thereafter). Prior to the expiration of the Lockout Period, Landlord may disapprove of any sublease proposed by Tenant, except as described in the foregoing sentence, in Landlord's sole and absolute discretion.

(iii) **Affiliate Transactions**. Notwithstanding the foregoing, Landlord's consent to a subletting of all or any portion of the Premises to any entity controlling, controlled by or under common control with Tenant (each, an "**Affiliate**" and collectively "**Affiliates**") shall not be required, provided that Landlord shall have the right to approve the form of any such sublease, such approval not to be unreasonably withheld, conditioned or delayed. In addition, Tenant shall have the right to assign this Lease, upon 10 days prior written notice to Landlord but without obtaining Landlord's prior written consent, to an Affiliate or to a corporation or other entity which is a successor in interest to Tenant, by way of merger, consolidation or corporate reorganization, or by the purchase of all or substantially all of the assets or the ownership interests of Tenant provided that: (i) in the case of an assignment to a successor in interest, such merger, consolidation, reorganization or purchase, as the case may be, is for a good business purpose and not principally for the purpose of transferring the Lease; and (ii) in all events the net worth (as determined in accordance with generally accepted accounting principles ("**GAAP**")) of the Affiliate assignee or successor in interest to Tenant is not less than the net worth (as determined in accordance with GAAP) of Tenant as of the date of Tenant's most current quarterly or annual financial statements; and (iii) such Affiliate assignee or successor-in-interest to Tenant shall agree in writing to assume all of the terms, covenants and conditions of this Lease arising after the effective date of the assignment (an assignment of this Lease to an Affiliate assignee or a successor-in-interest in accordance with this paragraph is referred to herein as a "**Permitted Assignment**").

(c) **Additional Conditions.** As a condition to any such assignment or subletting, whether or not Landlord's consent is required, Landlord may require:

(i) that any assignee or subtenant agree, in writing at the time of such assignment or subletting, that if Landlord gives such party notice that Tenant is in default under this Lease, such party shall thereafter make all payments otherwise due Tenant directly to Landlord, which payments will be received by Landlord without any liability except to credit such payment against those due under the Lease, and any such third party shall agree to attorn to

Landlord or its successors and assigns should this Lease be terminated for any reason; provided, however, in no event shall Landlord or its successors or assigns be obligated to accept such attornment; and

(ii) A list of Hazardous Materials, certified by the proposed assignee or sublessee to be true and correct, which the proposed assignee or sublessee intends to use, store, handle, treat, generate in or release or dispose of from the Premises, together with copies of all documents relating to such use, storage, handling, treatment, generation, release or disposal of Hazardous Materials by the proposed assignee or subtenant in the Premises or on the Project, prior to the proposed assignment or subletting, including, without limitation: permits; approvals; reports and correspondence; storage and management plans; plans relating to the installation of any storage tanks to be installed in or under the Project (provided, said installation of tanks shall only be permitted after Landlord has given its written consent to do so, which consent may be withheld in Landlord's sole and absolute discretion); and all closure plans or any other documents required by any and all federal, state and local Governmental Authorities for any storage tanks installed in, on or under the Project for the closure of any such tanks. Neither Tenant nor any such proposed assignee or subtenant is required, however, to provide Landlord with any portion(s) of the such documents containing information of a proprietary nature which, in and of themselves, do not contain a reference to any Hazardous Materials or hazardous activities.

(d) **No Release of Tenant, Sharing of Excess Rents.** Notwithstanding any assignment or subletting, Tenant shall at all times remain fully and primarily responsible and liable for the payment of Rent and for compliance with all of Tenant's other obligations under this Lease. If the Rent due and payable by a sublessee or assignee (or a combination of the rental payable under such sublease or assignment plus any bonus or other consideration therefor or incident thereto in any form) exceeds the sum of the rental payable under this Lease, (excluding however, any Rent payable under this Section) and actual and reasonable brokerage fees, legal costs, free rent, and any design or construction fees directly related to and required pursuant to the terms of any such sublease as well as any unamortized cost of Tenant's leasehold improvements paid for directly by Tenant provided that the excess value of any Tenant Improvements above such TI Allowance is fairly allocated to the subleased premises and amortized over the full Term of this Lease) ("**Excess Rent**"), then Tenant shall be bound and obligated to pay Landlord as Additional Rent hereunder 50% of such Excess Rent within 30 days following receipt thereof by Tenant. Landlord shall not require that a sublease contain a minimum level of sublease rent to be charged by Tenant to a subtenant. If Tenant shall sublet the Premises or any part thereof, Tenant hereby immediately and irrevocably assigns to Landlord, as security for Tenant's obligations under this Lease, all rent from any such subletting, and Landlord as assignee, may collect such rent and apply it toward Tenant's obligations under this Lease; except that, until the occurrence of a Default, Tenant shall have the right to collect such rent. There shall be no minimum Rent required to be charged by Tenant under any sublease hereunder.

(e) **No Waiver.** The consent by Landlord to an assignment or subletting shall not relieve Tenant or any assignees of this Lease or any sublessees of the Premises from obtaining the consent of Landlord to any further assignment or subletting nor shall it release Tenant or any assignee or sublessee of Tenant from full and primary liability under the Lease. The acceptance of Rent hereunder, or the acceptance of performance of any other term, covenant, or condition thereof, from any other person or entity shall not be deemed to be a waiver of any of the provisions of this Lease or a consent to any subletting, assignment or other transfer of the Premises.

23. **Estoppel Certificate**. Tenant shall, within 10 business days of written notice from Landlord, execute, acknowledge and deliver a statement in writing in the form of **Exhibit G** or in any other form reasonably requested by a proposed lender or purchaser, (i) certifying only that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease as so modified is in full force and effect) and the dates to which the rental and other charges are paid in advance, if any, (ii) acknowledging that there are not any uncured defaults on the part of Landlord hereunder, or specifying such defaults if any are claimed, and (iii) setting forth such further information with respect to the status of this Lease or the Premises as may be requested thereon. Any such statement may be relied upon by any prospective purchaser or encumbrancer of all or any portion of the real property of which the Premises are a part. Landlord shall, within 15 business days of written notice from Tenant, execute an estoppel certificate: (i) certifying that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease as so modified is in full force and effect) and the dates to which the rental and other charges are paid in advance, if any, (ii) acknowledging that, to Landlord's actual knowledge, there are not any uncured defaults on the part of Tenant hereunder, or specifying such defaults if any are claimed and (iii) setting forth such further information with respect to the status of this Lease or the Premises as may be reasonably requested thereon. Any such statement may be relied upon by any prospective assignee or lender of Tenant.

24. **Quiet Enjoyment.** So long as Tenant shall not be in Default under this Lease, Tenant shall, subject to the terms of this Lease, at all times during the Term, have peaceful and quiet enjoyment of the Premises against any person claiming by, through or under Landlord.

25. **Prorations.** All prorations required or permitted to be made hereunder shall be made on the basis of a 360 day year and 30 day months.

26. **Rules and Regulations.** Tenant shall, at all times during the Term and any extension thereof, comply with all reasonable rules and regulations at any time or from time to time established by Landlord and provided to Tenant at least ten (10) days prior to their effectiveness, of general applicability to all tenants and covering use of the Premises and the Project. The current rules and regulations are attached hereto as **Exhibit E**. If there is any conflict between said rules and regulations and other provisions of this Lease, the terms and provisions of this Lease shall control. Landlord shall not have any liability or obligation for the

breach of any rules or regulations by other tenants in the Project. Landlord shall use commercially reasonable efforts to enforce the rules and regulations, in a non-discriminatory manner, on all tenants of the Project.

27. **Subordination.**

(a) **Subordination and Nondisturbance.** Subject to the terms provided herein, this Lease and Tenant's interest and rights hereunder may be made subject and subordinate to the lien of any mortgage ("**Mortgage**") hereafter created on or against the Project or the Premises, and all amendments, restatements, renewals, modifications, consolidations, refinancing, assignments and extensions thereof, without the necessity of any further instrument or act on the part of Tenant; provided, however that so long as there is no Default hereunder, Tenant's right to possession of the Premises shall not be disturbed, and Tenant's rights under this Lease shall not be impaired by the Holder of any such Mortgage. Tenant agrees, to attorn to any such Holder provided that the mortgagee executes, acknowledges and delivers to Tenant a subordination, nondisturbance and attornment agreement ("**SNDA**") in the form of **Exhibit H** hereto or in another commercially reasonable form confirming attornment to such mortgagee as landlord and that such mortgagee recognizes Tenant's rights under the Lease so long as Tenant is not in default beyond applicable notice and cure periods such that Landlord has a then-currently effective right to terminate this Lease (but without any assumption by such holder of the Landlord's obligations under this Lease), except as set forth in this Section 27(a). Upon such attornment, this Lease shall continue in full force and effect as a direct lease between the mortgagee and Tenant upon all of the terms, conditions and covenants as are set forth in this Lease, except that the mortgagee shall not be (i) liable in any way to the Tenant for any act or omission, neglect or default on the part of Landlord under this Lease; (ii) responsible for any monies owing by or on deposit with Landlord to the credit of Tenant unless received by the holder; (iii) subject to Section 27(b) below, subject to any counterclaim or setoff that theretofore accrued to Tenant against Landlord; (iv) bound by any amendment or modification of this Lease subsequent to such mortgage or by any previous prepayment of regularly scheduled monthly installments of Base Rent or Additional Base Rent for more than one (1) month, which was not approved in writing by the mortgagee; (v) liable to the Tenant beyond the mortgagee's interest in the Property; or (vi) responsible for the performance of any of the obligations of Landlord under the provisions of Section 2, Section 18, Section 19 or the Work Letter, except that such mortgagee shall be required to recognize Tenant's rights under Section 2(c) and Section 31(c) (provided that in no event shall Tenant be required to pay Base Rent or Operating Expenses unless and until the Post Rent Credit Date has occurred, to pay Utilities unless and until the Delivery Date has occurred in the event of a CM Build Election, or the date of Substantial Completion of the Shell and Core Improvements has occurred in the event of a Non-CM Build Election, or to pay other Additional Rent unless and until the due date for such other Additional Rent has occurred. Tenant agrees that any present or future mortgagee may at its option unilaterally elect to subordinate, in whole or in part and by instrument in form and substance satisfactory to such mortgagee alone, the lien of its mortgagee (or the priority of its ground lease) to this Lease effective upon either notice from such holder to the Tenant in the

same fashion as notices from the Landlord to the Tenant are to be given hereunder or by the recording in the appropriate registry or recorder's office of an instrument, in which such holder subordinates its rights under such mortgage or ground lease to this Lease. Landlord hereby represents to Tenant that, as of the date of this Lease, there is no Mortgage encumbering the Project.

(b) **Other Matters.** Notwithstanding anything to the contrary herein contained, subject to the provisions of this Section 27: (x) nothing in this Section 27 shall affect Tenant's rights under Section 2(c), Section 18, Section 19, or Section 31 of this Lease, (y) any holder shall be required to recognize Tenant's offset rights under Section 31(c) in the event that Landlord does not timely pay any portion of the TI Allowance, and (z) no holder shall be relieved of its obligations as party-Landlord arising under the Lease from or after the date ("**Succession Date**") that such holder first acquires title or possession to the Premises. Tenant agrees that this Lease shall survive the merger of estates of ground (or improvements) lessor and lessee. Until a mortgagee (either superior or subordinate to this Lease) forecloses Landlord's equity of redemption (or terminates or succeeds to a new lease in the case of a ground or improvements lease), no mortgagee shall be liable for failure to perform any of Landlord's obligations (and such mortgagee shall thereafter be liable only after it succeeds to and holds Landlord's interest and then only as limited herein).

In the event Tenant alleges that Landlord is in default under any of Landlord's obligations under this Lease, Tenant agrees to give the holder of any mortgage, by registered mail, a copy of any notice of default that is served upon the Landlord, provided that prior to such notice, Tenant has been notified, in writing, (whether by way of notice of an assignment of lease, request to execute an estoppel letter, or otherwise) of the address of any such holder. Subject to the last sentence of this Section 27(b), Tenant further agrees that if Landlord shall have failed to cure such default within the time provided by law or this Lease or such additional time as may be provided in such notice to Landlord, such holder shall have 30 days after the last date on which Landlord could have cured such default within which such holder will be permitted to cure such default. If such default is curable by such holder but cannot be cured within such 30 day period, then such holder shall have such additional time (which shall not exceed 150 days after the last day on or before which Landlord is permitted to cure such default) as may be necessary to cure such default, if within such 30 day period such holder has commenced and is diligently pursuing the remedies necessary to effect such cure (including, but not limited to, commencement of foreclosure proceedings, if necessary, to effect such cure), in which event Tenant shall have no right to terminate the Lease based upon such default while such remedies are being diligently pursued by such holder.

(c) **Rent Assignment.** If, at any time and from time to time, Landlord assigns this Lease or the Rent payable hereunder to the holder of any mortgage on the Premises or the Project, or to any other party for the purpose of securing financing (the holder of any such mortgage and any other such financing party are referred to herein as the "**Financing**

Party"), whether such assignment is conditional in nature or otherwise, the following provisions shall apply:

(i) Except as set forth in clause (ii) below, such assignment to the Financing Party shall not be deemed an assumption by the Financing Party of any obligations of Landlord hereunder unless such Financing Party shall, by written notice to Tenant, specifically otherwise elect;

(ii) The Financing Party shall be treated as having assumed Landlord's obligations hereunder (subject to Section 27(a)) only upon foreclosure of its mortgage (or voluntary conveyance by deed in lieu thereof) or the taking of possession of the Premises from and after foreclosure; and

(iii) Subject to Section 27(a), the Financing Party shall be responsible for only such breaches under the Lease by Landlord that occur during the period of ownership by the Financing Party after such foreclosure (or voluntary conveyance by deed in lieu thereof) and taking of possession, as aforesaid.

Tenant hereby agrees to enter into such reasonable agreements or instruments as may, from time to time, be requested by Landlord in confirmation of the foregoing, subject to the requirements of this Section 27.

(d) **Other Instruments.** The provisions of this Article shall be self-operative; nevertheless, Tenant agrees within 20 days of written request in accordance with Section 43(a) to execute, acknowledge and deliver any SNDA or priority agreements or other instruments conforming to the provisions of this Lease, with such commercially reasonable changes as may be reasonably requested by Landlord or any mortgagee which are consistent, in all material respects, with the provisions of this Section 27. Tenant confirms that the SNDA form attached hereto as **Exhibit H** satisfies the requirements of this Section 27. Without limitation, where Tenant in this Lease indemnifies or otherwise covenants for the benefit of mortgagees, such agreements are for the benefit of mortgagees as third party beneficiaries; and at the request of Landlord, Tenant from time to time will confirm such matters directly with such mortgagee.

28. **Surrender.** Upon the expiration of the Term or earlier termination of Tenant's right of possession, Tenant shall surrender the Premises to Landlord in the same condition as received, subject to any Alterations or Installations permitted by Landlord to remain in the Premises, free of Hazardous Materials brought upon, kept, used, stored, handled, treated, generated in, or released or disposed of from, the Premises by any person other than a Landlord Party (collectively, "**Tenant HazMat Operations**") and released of all Hazardous Materials Clearances, broom clean, ordinary wear and tear, Landlord's repair and maintenance obligations and casualty loss and condemnation covered by Sections 18 and 19 excepted. At least 3 months prior to the surrender of the Premises, Tenant shall deliver to Landlord a narrative description of the actions proposed (or required by any Governmental Authority) to be

taken by Tenant in order to surrender the Premises (including any Installations permitted by Landlord to remain in the Premises) at the expiration or earlier termination of the Term, free from any residual impact from the Tenant HazMat Operations and otherwise released for unrestricted use and occupancy (the "**Surrender Plan**"). Such Surrender Plan shall be accompanied by a current listing of (i) all Hazardous Materials licenses and permits held by or on behalf of any Tenant Party with respect to the Premises, and (ii) all Hazardous Materials used, stored, handled, treated, generated, released or disposed of from the Premises, and shall be subject to the review and approval of Landlord's environmental consultant. In connection with the review and approval of the Surrender Plan, upon the request of Landlord, Tenant shall deliver to Landlord or its consultant such additional non-proprietary information concerning Tenant HazMat Operations as Landlord shall reasonably request. On or before such surrender, Tenant shall deliver to Landlord evidence that the approved Surrender Plan shall have been satisfactorily completed and Landlord shall have the right, subject to reimbursement at Tenant's expense as set forth below, to cause Landlord's environmental consultant to inspect the Premises and perform such additional procedures as may be deemed reasonably necessary to confirm that the Premises are, as of the effective date of such surrender or early termination of the Lease, free from any residual impact from Tenant HazMat Operations. Tenant shall reimburse Landlord, as Additional Rent, up to $3,000.00 for the actual out-of-pocket expense incurred by Landlord for Landlord's environmental consultant to review and approve the Surrender Plan and to visit the Premises and verify satisfactory completion of the same. Landlord shall have the unrestricted right to deliver such Surrender Plan and any report by Landlord's environmental consultant with respect to the surrender of the Premises to Landlord's lenders, investors, buyers, legal and other professional advisors and successor tenants of the Premises and their respective successors in interest, subject to the requirement that such parties keep the Surrender Plan and any such reports confidential (except for the transmission of the same to their respective successors in interest, subject to the same confidentiality requirement).

If Tenant shall fail to prepare or submit a Surrender Plan approved by Landlord, or if Tenant shall fail to complete the approved Surrender Plan, or if such Surrender Plan, whether or not approved by Landlord, shall fail to adequately address any residual effect of Tenant HazMat Operations in, on or about the Premises, then following notice to Tenant of such failure and Tenant's failure to commence a cure within 10 days of the delivery of such notice and to complete such cure within 30 days of the delivery of such notice, Landlord shall have the right to take such actions as Landlord may deem reasonable or appropriate to assure that the Premises and the Project are surrendered free from any residual impact from Tenant HazMat Operations, the cost of which actions shall be reimbursed by Tenant as Additional Rent, without regard to the limitation set forth in the first paragraph of this Section 28.

Tenant shall immediately return to Landlord all keys and/or access cards to parking, the Project, restrooms or all or any portion of the Premises furnished to or otherwise procured by Tenant upon surrender of the Premises. If any such access card or key is lost, Tenant shall pay to Landlord the cost of replacing such lost access card or key. Any Tenant's Property,

Alterations and property not so removed by Tenant as permitted or required herein shall be deemed abandoned and may be stored, removed, and disposed of by Landlord at Tenant's expense, and Tenant waives all claims against Landlord for any damages resulting from Landlord's retention and/or disposition of such property. All obligations of Tenant hereunder not fully performed as of the termination of the Term, including the obligations of Tenant under Section 30 hereof, shall survive the expiration or earlier termination of the Term, including, without limitation, indemnity obligations, payment obligations with respect to Rent and obligations concerning the condition and repair of the Premises.

29. **Waiver of Jury Trial.** TENANT AND LANDLORD WAIVE ANY RIGHT TO TRIAL BY JURY OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT, OR OTHERWISE, BETWEEN LANDLORD AND TENANT ARISING OUT OF THIS LEASE OR ANY OTHER INSTRUMENT, DOCUMENT, OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION HEREWITH OR THE TRANSACTIONS RELATED HERETO.

30. **Environmental Requirements.**

(a) **Prohibition/Compliance/Indemnity**. Subject to Section 30(b), Tenant shall not cause or permit any Hazardous Materials (as hereinafter defined) to be brought upon, kept, used, stored, handled, treated, generated in or about, or released or disposed of from, the Premises or the Project in violation of applicable Environmental Requirements (as hereinafter defined) by Tenant or any Tenant Party. If Tenant breaches the obligation stated in the preceding sentence, or if the presence of Hazardous Materials in the Premises during the Term or during any holding over results in contamination of the Premises, the Project or any adjacent property or if contamination of the Premises, the Project or any adjacent property by Hazardous Materials brought into, kept, used, stored, handled, treated, generated in or about, or released or disposed of from, the Premises by Tenant or any Tenant Party otherwise occurs during the Term or any holding over, Tenant hereby indemnifies and shall defend and hold Landlord and Landlord's Indemnified Parties harmless from any and all Claims (including, without limitation, the loss of, or restriction on, use of the Premises or any portion of the Project), expenses (including, without limitation, reasonable attorneys', consultants' and experts' fees, court costs and amounts paid in settlement of any claims or actions), fines, forfeitures or other civil, administrative or criminal penalties, injunctive or other relief (whether or not based upon personal injury, property damage, or contamination of, or adverse effects upon, the environment, water tables or natural resources), liabilities or losses (collectively, "**Environmental Claims**") which arise during or after the Term as a result of such breach of the obligation stated in the preceding sentence or as a result of such contamination. This indemnification of Landlord by Tenant includes, without limitation, reasonable costs incurred in connection with any investigation of site conditions or any cleanup, treatment, remedial, removal, or restoration work required by any federal, state or local Governmental Authority because of Hazardous Materials present in the air, soil or ground water above, on, or under the Premises to the extent set forth in this Section 30. Without limiting the foregoing, if the

presence of any Hazardous Materials: (i) on the Premises which is caused or permitted by Tenant or any Tenant Party, or (ii) on the Project or any adjacent property which is caused by Tenant or any Tenant Party, in either case, resulting in any contamination of the Premises, the Project or any adjacent property, Tenant shall promptly take all actions at its sole expense and in accordance with applicable Environmental Requirements as are necessary to return the Premises, the Project or any adjacent property to the condition existing prior to the time of such contamination, provided that Landlord's approval of such action shall first be obtained, which approval shall not unreasonably be withheld, conditioned or delayed so long as such actions would not potentially have any material adverse long-term or short-term effect on the Premises or the Project. Notwithstanding any provision hereof to the contrary, Tenant shall not be responsible for, and the indemnification and hold harmless obligations set forth in this Section 30(a) shall not include matters arising from: (A) the existing environmental condition of the Premises as of the Delivery Date or any earlier date of entry into the Premises by Tenant (a "**Pre-Existing Condition**"); or (B) Hazardous Materials brought upon, kept, used, stored, handled, treated, generated in or about, or released or disposed of from the Premises during the Term by Landlord or any Landlord Party (a "**Landlord Condition**"), to the extent, in any such case, that such Environmental Claim does not arise or result, in whole or in part, from any exacerbation of, or contribution to, a Pre-Existing Condition by the actions of Tenant or any Tenant Party. Landlord shall be responsible, at Landlord's expense, for the Pre-Existing Condition of the Property, and any Landlord Condition. In addition, if a release of Hazardous Materials by another tenant of the Project ("**Other Tenant**") or by any of such tenant's agents, employees, invitees or contractors (together with any Other Tenant, collectively, "**Other Tenant Parties**"; individually, an "**Other Tenant Party**") is alleged to have entered the Premises or caused another violation of Environmental Requirements therein, Landlord shall cause such release to be evaluated by a qualified independent third party environmental professional to determine whether Tenant or an Other Tenant Party is the cause of the release or violation, and Landlord and Tenant shall have recourse only to the Other Tenant or Other Tenant Party and Tenant shall have no responsibility for such release or violation to the extent such party is the cause of the release or other violation, as determined by such evaluation.

(b) **Business**. Landlord acknowledges that it is not the intent of this Section 30 to prohibit Tenant from using the Premises for the Permitted Use. Tenant may operate its business according to prudent industry practices so long as the use or presence of Hazardous Materials is strictly and properly monitored according to all then applicable Environmental Requirements. As a material inducement to Landlord to allow Tenant to use Hazardous Materials in connection with its business, Tenant agrees to deliver to Landlord prior to the Post Rent Credit Date a list identifying each type of Hazardous Materials to be brought upon, kept, used, stored, handled, treated, generated on, or released or disposed of from, the Premises and setting forth any and all governmental approvals or permits required in connection with the presence, use, storage, handling, treatment, generation, release or disposal of such Hazardous Materials on or from the Premises ("**Hazardous Materials List**"). Tenant shall deliver to Landlord an updated Hazardous Materials List upon written request by Landlord and shall also deliver an updated list before any new Hazardous Material is brought onto, kept,

used, stored, handled, treated, generated on, or released or disposed of from, the Premises. Tenant shall deliver to Landlord true and correct copies of the following documents (the "**Haz Mat Documents**") relating to the use, storage, handling, treatment, generation, release or disposal of Hazardous Materials prior to the Post Rent Credit Date, or if unavailable at that time, concurrent with the receipt from or submission to a Governmental Authority: permits; approvals; reports and correspondence; storage and management plans, notice of violations of any Legal Requirements; all closure plans or any other documents required by any and all federal, state and local Governmental Authorities. Tenant shall: (x) comply with all filing and reporting obligations required by Environmental Requirements, and (y) provide copies of any filings and reports to Landlord at the time that it delivers such filings and reports to the applicable Governmental Authorities.

(c) **Testing.** Landlord shall have the right to conduct annual tests of the Premises to determine whether any contamination of the Premises or the Project has occurred as a result of Tenant's use. In addition, at any time, and from time to time, prior to the expiration or earlier termination of the Term, Landlord shall have the right to conduct appropriate tests of the Premises and the Project to determine if contamination has occurred as a result of Tenant's use of the Premises. In connection with such testing, upon the request of Landlord, Tenant shall deliver to Landlord or its consultant such reasonable non-proprietary information concerning the use of Hazardous Materials in or about the Premises by Tenant or any Tenant Party. Such tests and inspections shall be conducted at Landlord's expense, unless such tests or inspections reveal that Tenant has not complied with any Environmental Requirement, in which case Tenant shall reimburse Landlord for the reasonable out-of-pocket costs of such tests and inspections. Landlord shall provide Tenant with a copy of all third party, non-confidential reports and tests of the Premises made by or on behalf of Landlord during the Term without representation or warranty and subject to a confidentiality agreement. Tenant shall, at its sole cost and expense, promptly and satisfactorily remediate any environmental conditions identified by such testing in accordance with all Environmental Requirements.

(d) **Underground Tanks.** If underground or other storage tanks storing Hazardous Materials located on the Premises or the Project are used by Tenant or are hereafter placed on the Premises or the Project by Tenant, Tenant shall install, use, monitor, operate, maintain, upgrade and manage such storage tanks, maintain appropriate records, obtain and maintain appropriate insurance, implement reporting procedures, properly close any underground storage tanks, and take or cause to be taken all other actions necessary or required under applicable state and federal Legal Requirements, as such now exists or may hereafter be adopted or amended in connection with the installation, use, maintenance, management, operation, upgrading and closure of such storage tanks.

(e) **Tenant's Obligations.** Tenant's obligations under this Section 30 shall survive the expiration or earlier termination of the Lease. During any period of time after the expiration or earlier termination of this Lease required by Tenant or Landlord to complete the removal from the Premises of any Hazardous Materials (including, without limitation, the release

and termination of any licenses or permits restricting the use of the Premises and the completion of the approved Surrender Plan), Tenant shall continue to pay the full Rent in accordance with this Lease for any portion of the Premises not relet by Landlord in Landlord's sole discretion, which Rent shall be prorated daily.

(f) **Definitions.** As used herein, the term "**Environmental Requirements**" means all applicable present and future statutes, regulations, ordinances, rules, codes, judgments, orders or other similar enactments of any Governmental Authority regulating or relating to health, safety, or environmental conditions on, under, or about the Premises or the Project, or the environment, including without limitation, the following: the Comprehensive Environmental Response, Compensation and Liability Act; the Resource Conservation and Recovery Act; and all state and local counterparts thereto, and any regulations or policies promulgated or issued thereunder. As used herein, the term "**Hazardous Materials**" means and includes any substance, material, waste, pollutant, or contaminant listed or defined as hazardous or toxic, or regulated by reason of its impact or potential impact on humans, animals and/or the environment under any Environmental Requirements, asbestos and petroleum, including crude oil or any fraction thereof, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas). As defined in Environmental Requirements, Tenant is and shall be deemed to be the "**operator**" of Tenant's "**facility**" and the "**owner**" of all Hazardous Materials brought on the Premises by Tenant or any Tenant Party, and the wastes, by-products, or residues generated, resulting, or produced therefrom.

(g) **Landlord Obligations**.

(i) Tenant acknowledges that it has received and reviewed certain environmental reports listed on **Exhibit I** ("**Environmental Reports**") regarding the condition of the Project. Landlord represents and warrants to Tenant that, to the best of Landlord's knowledge, the Project is free of Hazardous Materials except for materials typically found in so-called urban soils and matters disclosed in the Environmental Reports. Landlord covenants that neither Landlord itself, or any Landlord Party, will introduce Hazardous Materials in the Premises so as to materially adversely affect Tenant, other than customary amounts used in connection with the operation, repair and maintenance of the Premises in compliance with applicable Environmental Requirements. Subject to the provisions of Section 36 below, Landlord hereby agrees to indemnify and defend Tenant and Tenant's partners, shareholders, members, managers, officers, agents, and employees ("**Tenant Indemnitees**"), and hold the Tenant Indemnitees harmless from and against any liability, claims, and costs, including without limitation, reasonable attorneys' fees, arising from any breach by Landlord of its obligations, representations and warranties under this Section 30(g). This hold harmless and indemnity shall survive the expiration of the Term.

(ii) In the event of any release of Hazardous Materials at, in, on, under, or about the Premises, or the Project (whether occurring prior to or after the Execution

Date of this Lease) that requires remediation or any other response action under applicable Environmental Requirements, or in the event that any Hazardous Materials are discovered at, in, on, under, or about the Premises or the Project that requires remediation or any other response action under applicable Environmental Requirements, in either case, that materially and adversely affects Tenant's use and occupancy of the Premises and to the extent that such release is not caused by Tenant, or any Tenant Party, or anyone claiming by, through or under them on and after the Delivery Date or any earlier date of entry into the Premises by Tenant, or migrating from property owned by Tenant or any Tenant Party on and after the Execution Date of Lease, Landlord shall, without charge to Tenant, remediate or cause to be remediated such release and perform or cause to be performed any other response action as required by applicable Environmental Requirements to the extent necessary so that Tenant may use the Premises for the Permitted Uses.

31. **Tenant's Remedies/Limitation of Liability.**

(a) **Notice of Landlord's Default.** Landlord shall not be in default hereunder unless Landlord fails to perform any of its obligations hereunder within 30 days after written notice from Tenant specifying such failure (unless such performance will, due to the nature of the obligation, require a period of time in excess of 30 days, then after such period of time as is reasonably necessary). Upon any default by Landlord, Tenant shall give notice by registered or certified mail to any Holder of a Mortgage covering the Premises and to any landlord of any lease of property in or on which the Premises are located and Tenant shall offer such Holder and/or landlord a reasonable opportunity to cure the default, including time to obtain possession of the Project by power of sale or a judicial action if such should prove necessary to effect a cure; provided Landlord shall have furnished to Tenant in writing the names and addresses of all such persons who are to receive such notices. All obligations of Landlord hereunder shall be construed as covenants, not conditions; and, except as may be otherwise expressly provided in this Lease, Tenant may not terminate this Lease for breach of Landlord's obligations hereunder.

(b) **Tenant's Right to Cure.** Notwithstanding the foregoing, if, at any time after the Post Rent Credit Date, any claimed Landlord default hereunder will immediately, materially and adversely affect Tenant's ability to conduct its business in the Premises (a "**Material Landlord Default**"), Tenant shall, as soon as reasonably possible, but in any event within 2 business days of obtaining knowledge of such claimed Material Landlord Default, give Landlord written notice of such claim and telephonic notice to Tenant's principal contact with Landlord. Landlord shall then have 2 business days to commence cure of such claimed Material Landlord Default and shall diligently prosecute such cure to completion. If Landlord fails to commence cure of any claimed Material Landlord Default as provided above, Tenant may commence and prosecute such cure to completion, and shall be entitled to recover the costs of such cure (but not any consequential or other damages) from Landlord, to the extent of Landlord's obligation to cure such claimed Material Landlord Default hereunder, subject to the limitations set forth in this Lease. Landlord shall reimburse Tenant for such costs within 30 days after invoice therefor, and, if not so paid, Tenant shall have the right to recover the same,

together with interest on any unpaid amounts equal to the rate of interest on 10-year U.S. Treasury Notes at the time of Tenant's demand, plus 4%, by an abatement of Base Rent, provided that such abatement shall cease at such time as and to the extent that payment is tendered to Tenant. Notwithstanding the foregoing, if the amount of such abatement is more than 35% of the Base Rent due in any month, then the amount abated in any one month shall not exceed 35% of such Base Rent, and the excess amount of the abatement shall be carried forward until paid in full. In no event shall the provisions of this Section 31(b) benefit any subtenant or be exercisable by subtenants against Landlord.

(c) **Right of Base Rent Offset for TI Allowance Default of Landlord.** If Landlord fails to timely pay any portion of the TI Allowance under the provisions of the Work Letter within 30 days after notice from Tenant of the date when due, then until such past due amount is paid or recouped hereunder, Tenant shall have the right to deduct any such past due amount from the next installment(s) of Base Rent due under this Lease until Tenant has received full credit for the amount due to Tenant.

(d) **Limitation of Liability.** All obligations of Landlord under this Lease will be binding upon Landlord only during the period of its ownership of the Premises and not thereafter. The term "Landlord" in this Lease shall mean only the owner for the time being of the Premises. Upon the transfer by such owner of its interest in the Premises, such owner shall thereupon be released and discharged from all obligations of Landlord thereafter accruing, but such obligations shall be binding during the Term upon each new owner for the duration of such owner's ownership.

32. **Inspection and Access.** Landlord and its agents, representatives, and contractors may enter the Premises at any reasonable time to inspect the Premises and to make such repairs as may be required or permitted pursuant to this Lease and for any other business purpose. Landlord and Landlord's representatives may enter the Premises during business hours on not less than 48 hours advance written notice (except in the case of emergencies in which case no such notice shall be required and such entry may be at any time) for the purpose of effecting any such repairs, inspecting the Premises, showing the Premises to prospective purchasers and, during the last year of the Term, to prospective tenants or for any other business purpose provided that Landlord shall use commercially reasonable efforts to minimize any interference with Tenant's use of the Premises for the Permitted Use. During the last eighteen (18) months of the Term Landlord may erect a suitable sign on the Building exterior or the property adjacent thereto (but not the interior of the Premises) stating the Premises are available to let; and, at any time during the Term Landlord may erect a suitable sign on the Project stating that the Project is available for sale. Landlord may grant easements, make public dedications, designate Common Areas and create restrictions on or about the Premises, provided that no such easement, dedication, designation or restriction materially, adversely affects Tenant's use or occupancy of the Premises for the Permitted Use or access thereto nor materially increases Tenant's obligations as provided in this Lease. At Landlord's request, Tenant shall execute such instruments as may be reasonably necessary for such

easements, dedications or restrictions. Tenant shall at all times, except in the case of emergencies, have the right to escort Landlord or its agents, representatives, contractors or guests while the same are in the Premises, provided such escort does not materially and adversely affect Landlord's access rights hereunder.

33. **Security.** Tenant acknowledges and agrees that security devices and services, if any, while intended to deter crime may not in given instances prevent theft or other criminal acts and that Landlord is not providing any security services with respect to the Premises. Tenant agrees that Landlord shall not be liable to Tenant for, and Tenant waives any claim against Landlord with respect to, any loss by theft or any other damage suffered or incurred by Tenant in connection with any unauthorized entry into the Premises or any other breach of security with respect to the Premises. Tenant shall be solely responsible for the personal safety of Tenant's officers, employees, agents, contractors, guests and invitees while any such person is in, on or about the Premises and/or the Project. Tenant shall at Tenant's cost obtain insurance coverage to the extent Tenant desires protection against such criminal acts.

34. **Force Majeure.** Neither party hereunder shall be responsible or liable for delays in the performance of its obligations hereunder when caused by, related to, or arising out of acts of God, strikes, lockouts, or other labor disputes, embargoes, quarantines, extreme weather, national, regional, or local disasters declared as a disaster or emergency by a Governmental Authority, inability to obtain labor or materials (or reasonable substitutes therefor) or failure of, or inability to obtain, utilities necessary for performance, governmental restrictions, orders, limitations, regulations, or controls, national emergencies, delay in issuance or revocation of permits or other governmental certificates or approvals, enemy or hostile governmental action, terrorism, insurrection, riots, civil disturbance or commotion, fire or other casualty, and other causes or events beyond their reasonable control ("**Force Majeure**"). Notwithstanding the foregoing, in no event shall Tenant be entitled to any abatement or reduction of Rent by reason of Force Majeure.

35. **Brokers, Entire Agreement, Amendment.** Landlord and Tenant each represent and warrant that it has not dealt with any broker, agent or other person (collectively, "Broker") in connection with this transaction and that no Broker brought about this transaction, other than CB Richard Ellis-N.E. Partners LP, acting for Landlord, and Colliers International, acting for Tenant. Landlord and Tenant each hereby agree to indemnify and hold the other harmless from and against any claims by any broker, finder or salesperson, other than the Brokers named in this Section 35, claiming a commission or other form of compensation by virtue of having dealt with Tenant or Landlord, as the case may be, with regard to this Lease. Landlord shall be responsible for amounts payable to CB Richard Ellis-N.E. Partners LP and Colliers International in connection with this Lease pursuant to a separate written agreement between Landlord and such parties.

36. **Limitation on Liability**. NOTWITHSTANDING ANYTHING SET FORTH HEREIN OR IN ANY OTHER AGREEMENT BETWEEN LANDLORD AND TENANT TO THE

CONTRARY: (A) LANDLORD SHALL NOT BE LIABLE TO TENANT OR ANY OTHER PERSON FOR (AND TENANT AND EACH SUCH OTHER PERSON ASSUME ALL RISK OF) LOSS, DAMAGE OR INJURY, WHETHER ACTUAL OR CONSEQUENTIAL TO: TENANT'S PERSONAL PROPERTY OF EVERY KIND AND DESCRIPTION, INCLUDING, WITHOUT LIMITATION TRADE FIXTURES, EQUIPMENT, INVENTORY, SCIENTIFIC RESEARCH, SCIENTIFIC EXPERIMENTS, LABORATORY ANIMALS, PRODUCT, SPECIMENS, SAMPLES, AND/OR SCIENTIFIC, BUSINESS, ACCOUNTING AND OTHER RECORDS OF EVERY KIND AND DESCRIPTION KEPT AT THE PREMISES AND ANY AND ALL INCOME DERIVED OR DERIVABLE THEREFROM; (B) THERE SHALL BE NO PERSONAL RECOURSE TO LANDLORD FOR ANY ACT OR OCCURRENCE IN, ON OR ABOUT THE PREMISES OR ARISING IN ANY WAY UNDER THIS LEASE OR ANY OTHER AGREEMENT BETWEEN LANDLORD AND TENANT WITH RESPECT TO THE SUBJECT MATTER HEREOF AND ANY LIABILITY OF LANDLORD HEREUNDER SHALL BE STRICTLY LIMITED SOLELY TO LANDLORD'S INTEREST IN THE PROJECT OR ANY PROCEEDS FROM SALE OR CONDEMNATION THEREOF AND ANY INSURANCE PROCEEDS PAYABLE IN RESPECT OF LANDLORD'S INTEREST IN THE PROJECT OR IN CONNECTION WITH ANY SUCH LOSS; AND (C) IN NO EVENT SHALL ANY PERSONAL LIABILITY BE ASSERTED AGAINST ANY OF LANDLORD'S OFFICERS, DIRECTORS, EMPLOYEES, AGENTS OR CONTRACTORS. UNDER NO CIRCUMSTANCES SHALL LANDLORD OR ANY OF LANDLORD'S OFFICERS, DIRECTORS, EMPLOYEES, AGENTS OR CONTRACTORS BE LIABLE FOR INJURY TO TENANT'S BUSINESS OR FOR ANY LOSS OF INCOME OR PROFIT THEREFROM.

IN NO EVENT SHALL ANY PERSONAL LIABILITY BE ASSERTED AGAINST ANY OF TENANT'S OFFICERS, DIRECTORS, EMPLOYEES, AGENTS OR CONTRACTORS.

37. **Severability.** If any clause or provision of this Lease is illegal, invalid or unenforceable under present or future laws, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby. It is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added, as a part of this Lease, a clause or provision as similar in effect to such illegal, invalid or unenforceable clause or provision as shall be legal, valid and enforceable.

38. **Signage; Exterior Signage Rights.**

(a) **Signage Generally**. Except as expressly provided in this Section 38, Tenant shall not, without the prior written consent of Landlord, which may be granted or withheld in Landlord's sole discretion, except as set forth below: (i) attach any awnings, exterior lights, decorations, balloons, flags, pennants, banners, painting or other projection to any outside wall of the Project, (ii) use any curtains, blinds, shades or screens other than Landlord's standard window coverings, (iii) coat or otherwise sunscreen the interior or exterior of any windows, (iv) place any bottles, parcels, or other articles on the window sills, (v) place any equipment,

furniture or other items of personal property on any exterior balcony, or (vi) paint, affix or exhibit on any part of the Premises or the Project any signs, notices, window or door lettering, placards, decorations, or advertising media of any type which can be viewed from the exterior of the Premises. Interior signs on doors and the directory tablet shall be inscribed, painted or affixed for Tenant by Landlord at the sole cost and expense of Tenant, and shall be of a size, color and type acceptable to Landlord. The directory tablet shall be provided exclusively for the display of the name and location of tenants.

(b) **Exterior Signage Rights of Tenant**. Notwithstanding any provision of this Lease to the contrary, in the event that Tenant leases and occupies more than 60% of the rentable square footage of the 60 Binney Building, Tenant shall have the exclusive right (except for first floor retail tenant signage) to apply for City of Cambridge for approval of, and, upon issuance of such approval, install a single mounted sign or plaque below the second floor on the 60 Binney Building near the 60 Binney Street lobby entrance, subject to existing laws and Landlord's reasonable approval of size, design and location thereof ("**Low Signage**"). Alternatively, Landlord may provide monument signage in a prominent location near the entrance of the 60 Binney Building.

For signage above the 2nd floor of the 60 Binney Building ("**High Signage**"), Landlord understands that the City interprets the current zoning ordinance to define the Building as one building, and, therefore, High Signage is only allowed in a single location on the Building. It is Landlord's intention to provide rights to High Signage for up to two anchor tenants of the Building (i.e., one location for the 60 Binney Building anchor tenant, and a second location for the 50 Binney Building anchor tenant). Landlord and Tenant shall work cooperatively to obtain municipal approval for High Signage on both the 60 Binney Building and the 50 Binney Building, and Tenant shall reasonably cooperate in such effort. In the event that Landlord is successful in obtaining municipal approval for High Signage on both the 60 Binney Building and the 50 Binney Building, Tenant shall have the right to place a single sign or plaque on the exterior of the 60 Binney Building at the penthouse level on the Second Street elevation. In the event that the City does not allow High Signage on both the 60 Binney Building and the 50 Binney Building: (a) Tenant shall not have a right to High Signage; and (b) no other tenant shall have a right to High Signage.

39. **Right to Extend Term**. Tenant shall have the right to extend the Term of the Lease upon the following terms and conditions:

(a) **Extension Rights.** Tenant shall have 2 consecutive rights (each, an "**Extension Right**") to extend the term of this Lease for 5 years each (each, an "**Extension Term**") on the same terms and conditions as this Lease (other than Base Rent) by giving Landlord written notice of its election to exercise each Extension Right at least 18 months prior to the expiration of the Base Term of the Lease or the expiration of any prior Extension Term. Landlord shall deliver to Tenant Landlord's determination of the Market Rate (as defined below) ("**Landlord's Rent Determination**") within 30 days after delivery of Tenant's notice of its

election to exercise such Extension Right (provided that Landlord shall not be obligated to deliver such determination to Tenant earlier than 18 months prior to the expiration of the Term). Upon the commencement of any Extension Term, Base Rent shall be payable at the 100% of the Market Rate (as defined below). As used herein, "**Market Rate**" shall mean the then fair market rental rate for space comparable to the Premises in East Cambridge, Massachusetts, including such terms and conditions, including rent, free rent, tenant improvement allowances, brokerage commissions, annual escalations, construction time and all other lease concessions, which non-equity tenants are then receiving in connection with leases of comparable space in buildings comparable to the Building in terms of age, quality, size, condition, location in the East Cambridge market, services, amenities, quality of construction and appearance (provided that in no event shall Landlord be required to provide any free rent or tenant improvement allowances in connection with any exercise by Tenant of an Extension Right). In addition, Tenant shall continue to pay as Rent hereunder the 100% of the market rate for the parking rights provided hereunder.

During the 30-day period following the delivery of the Landlord's Rent Determination, Landlord and Tenant agree at either party's request for a representative of each party to meet to discuss Landlord's Rent Determination. If, within 30 days after delivery of Landlord's Rent Determination, Tenant has not agreed with Landlord's determination of the Market Rate during such subsequent Extension Term after negotiating in good faith, Tenant may by written notice to Landlord not later than the end of such 30 day period after delivery of Landlord's Rent Determination, elect arbitration as described in Section 39(b) below. If, prior to the expiration of such 30 day period, Tenant does not either give written notice to Landlord of either Tenant's acceptance of Landlord's Rent Determination or Tenant's election of such arbitration, Tenant shall be deemed to have waived any right to extend, or further extend, the Term of the Lease and all of the remaining Extension Rights shall terminate.

(b) **Arbitration.**

(i) Within 10 days of Tenant's notice to Landlord of its election to arbitrate Market Rate, each party shall deliver to the other a proposal containing the Market Rate that the submitting party believes to be correct ("**Extension Proposal**"). If either party fails to timely submit an Extension Proposal (and such failure continues for 10 days after notice to the other party of such failure), then the other party's submitted proposal shall determine the Base Rent for the Extension Term. If both parties submit Extension Proposals, then Landlord and Tenant shall meet within 7 business days after delivery of the last Extension Proposal and make a good faith attempt to mutually appoint a single Arbitrator (and defined below) to determine the Market Rate. If Landlord and Tenant are unable to agree upon a single Arbitrator, then each shall, by written notice delivered to the other within 7 business days after the meeting, select an Arbitrator. If either party fails to timely give notice of its selection for an Arbitrator, the other party's submitted proposal shall determine the Base Rent for the Extension Term. The 2 Arbitrators so appointed shall, within 5 business days after their appointment, appoint a third Arbitrator. If the 2 Arbitrators so selected cannot agree on the selection of the

third Arbitrator within the time above specified, then either party, on behalf of both parties, may request such appointment of such third Arbitrator by application to any state court of general jurisdiction in the jurisdiction in which the Premises are located, upon 10 days prior written notice to the other party of such intent.

(ii) The decision of the Arbitrator(s) shall be made within 30 days after the appointment of a single Arbitrator or the third Arbitrator, as applicable. If there is a single Arbitrator, the decision of the single Arbitrator shall be final and binding upon the parties. If there are 3 Arbitrators, the third Arbitrator shall chose in full 1 of the decisions of the other 2 Arbitrators, and such choice shall be final and binding upon the parties. Each party shall pay the fees and expenses of the Arbitrator appointed by or on behalf of such party and the fees and expenses of the third Arbitrator shall be borne equally by both parties. If the Market Rate are not determined by the first day of the Extension Term, then Tenant shall pay Landlord Base Rent in an amount equal to the Base Rent in effect immediately prior to the Extension Term and increased by the Base Rent Adjustment Percentage until such determination is made. After the determination of the Market Rate, the parties shall make any necessary adjustments to such payments made by Tenant. Landlord and Tenant shall then execute an amendment recognizing the Market Rate for the Extension Term.

(iii) An "**Arbitrator**" shall be any person appointed by or on behalf of either party or appointed pursuant to the provisions hereof and: (i) shall be (A) a member of the American Institute of Real Estate Appraisers with not less than 15 years of experience in the appraisal of high tech or life sciences and office space in East Cambridge, Massachusetts, or (B) a licensed commercial real estate broker with not less than 15 years' experience representing landlords and/or tenants in the leasing of high tech or life sciences and office space in East Cambridge, Massachusetts; (ii) devoting substantially all of their time to professional appraisal, brokerage work, or institutional real estate advisory work, as applicable, at the time of appointment; and (iii) be in all respects impartial and disinterested.

(c) **Rights Personal.** Extension Rights are personal to Tenant and not assignable without Landlord's consent, which may be granted or withheld in Landlord's sole discretion separate and apart from any consent by Landlord to an assignment of Tenant's interest in the Lease, except that the same may be assigned in connection with any Permitted Assignment of this Lease.

(d) **Termination.** The Extension Right shall terminate and be of no further force or effect even after Tenant's due and timely exercise of the Extension Right, if, after such exercise, but prior to the commencement of the Extension Term, Tenant has Defaulted 3 or more times during the period from the date of the exercise of an Extension Right to the commencement date of an Extension Term, whether or not such Defaults are cured.

(e) **Exceptions.** Notwithstanding anything set forth above to the contrary, Tenant may not exercise any of the Extension Rights: (i) during any period of time that Tenant is

in Default under any provision of this Lease; or (ii) during any period of time that Tenant has sublet more than 30% of the rentable square feet in the Premises.

(f) **No Extensions.** The period of time within which any Extension Rights may be exercised shall not be extended or enlarged by reason of Tenant's inability to exercise the Extension Rights.

40. **Intentionally Deleted.**

41. **Right of First Offer.**

(a) **Right of First Offer**. Subject to the Sanofi Rights, if at any time any Available Space (as defined below) in the 50 Binney Building becomes available for lease during the Term after its initial occupancy by a third party, Landlord shall give notice of such availability to Tenant promptly thereafter ("**First Offer Right**"). Landlord shall set forth in reasonable detail a description of the Available Space and all of the applicable terms and conditions upon which the Available Space is offered to Tenant ("**Offer Notice**"). For purposes of this Section 41(a), "**Available Space**" shall mean any non-retail space exclusive of Common Area in the 50 Binney Building which is not occupied by a tenant or which is occupied by an existing tenant whose lease is expiring within 6 months or less (or such longer period designated by Landlord in its sole discretion, but not to exceed 18 months) and such tenant does not wish to renew (whether or not such tenant has a right to renew) its occupancy of such space. Tenant shall, within 10 business days following delivery of the Offer Notice, by written notice delivered to Landlord, (i) reject the Offer Notice, or (ii) offer to lease all of such space from Landlord on the terms set forth in the Offer Notice. If Tenant fails to timely reject the Offer Notice or offer to lease such space from Landlord as set forth above, then Tenant shall be deemed to have rejected the Offer Notice. If Tenant timely offers to lease the Available Space as set forth in clause (ii) above, the Available Space shall be leased by Tenant on the accepted terms and otherwise on all of the terms of this Lease. The rights of Tenant under this Section 41 are expressly subject and subordinate to the rights of the tenant under a lease of premises in the 50 Binney Building between Landlord and Sanofi US Services Inc. ("**Sanofi Rights**").

If Tenant does not timely offer to lease such space from Landlord as provided above (or rejects such Offer Notice or is deemed to reject such Offer Notice), and Landlord later intends to lease any of the Available Space in a quantity that is less than 75% of the space set forth in such Offer Notice, or otherwise on business terms that are less than 90% of the Net Effective Annual Rent (as hereinafter defined) per rentable square foot than provided in such Offer Notice, the procedure set forth in this paragraph shall be repeated with respect to an Offer Notice and timing for acceptance. For the purposes of this Section 41, the term "**Net Effective Annual Rent**" shall be calculated as follows: (x) calculate the average Base Rent per rentable square foot (total Base Rent during the Term of the Lease for the offered Available Space, taking into account any rental abatement period, divided by number of years in such Term, divided by rentable square feet); (y) divide the tenant improvement allowance and any other

monetary concession to the prospective tenant such as assumption of remaining lease obligations (if any) by the number of years in the Term of the Lease for such Available Space; and (z) subtract the amount computed in (y) from the amount computed in (x). Except as aforesaid, if Tenant does not timely offer to lease such Available Space (or rejects such Offer Notice or is deemed to reject such Offer Notice), then the Available Space may be leased by Landlord to a third party other than Tenant, free of any restrictions imposed by this Section 41.

(b) **Amended Lease**. Within 14 days after acceptance of an offer pursuant to this Section 41, the parties shall enter into a lease amendment providing for the incorporation of the Available Space into the Premises on such terms. If after the expiration of such 14 day period, no lease amendment for the Available Space has been executed, and Landlord tenders to Tenant an amendment to this Lease which sets forth the terms for the rental of the Available Space consistent with the Offer Notice, and Tenant fails to execute such Lease amendment within 10 business days following such tender, Tenant shall be deemed to have waived its right to lease such Available Space at any time during the balance of the Term.

(c) **Exceptions**. Notwithstanding the above, the First Offer Right shall not be in effect and may not be exercised by Tenant:

(A) during any period of time that Tenant is in Default under any provision of this Lease; or

(B) during any period of time that Tenant has sublet more than 30% of the rentable square feet in the Premises; or

(C) if Tenant has been in Default under any provision of this Lease 3 or more times, whether or not the Defaults are cured, during the 12 month period prior to the date on which Tenant seeks to exercise the First Offer Right; or

(D) if fewer than 18 months remain in the Term.

(d) **Termination**. The First Offer Right shall terminate and be of no further force or effect even after Tenant's due and timely exercise of the First Offer Right, if, after such exercise, but prior to the commencement date of the lease of such Available Space, Tenant fails to timely cure any Default by Tenant under this Lease.

(e) **Right Personal.** The First Offer Right is personal to Tenant and is not assignable without Landlord's consent, which may be granted or withheld in Landlord's sole discretion separate and apart from any consent by Landlord to an assignment of Tenant's interest in the Lease, except that the First Offer Right may be exercised by any party that becomes a Tenant hereunder by virtue of any Permitted Assignment of this Lease.

(f) **No Extensions.** The period of time within which the First Offer Right may be exercised shall not be extended or enlarged by reason of Tenant's inability to exercise the First Offer Right.

42. **Roof Equipment.** As long as Tenant is not in Default under this Lease, Tenant shall have the right at its sole cost and expense, without the payment of Additional Rent therefor, but subject to compliance with all Legal Requirements and the requirements of this Section 42, to install, maintain, and remove on the top of the roof of the 60 Binney Building Tenant's Share of the available penthouse and rooftop space on the 60 Binney Building, including, in a location or location designated by Landlord, a natural gas fired emergency generator, and other mechanical equipment and telecommunications equipment serving the Premises (all of which having a diameter and height acceptable to Landlord) as Tenant may from time to time desire (collectively, the "**Roof Equipment**") on the following terms and conditions:

(a) **Requirements.** Tenant shall submit to Landlord (i) the plans and specifications for the installation of the Roof Equipment, (ii) copies of all required governmental and quasi-governmental permits, licenses, and authorizations that Tenant will and must obtain at its own expense, with the cooperation of Landlord, if necessary for the installation and operation of the Roof Equipment, and (iii) an insurance policy or certificate of insurance evidencing insurance coverage as required by this Lease and any other insurance as reasonably required by Landlord for the installation and operation of the Roof Equipment. Landlord shall not unreasonably withhold, condition or delay its approval for the installation and operation of the Roof Equipment; provided, however, that Landlord may reasonably withhold its approval if the installation or operation of the Roof Equipment: (A) may damage the structural integrity of the Building or the Project; (B) may void, terminate, or invalidate any applicable roof warranty; (C) with respect to requests for approval after the initial request for approval of Roof Equipment, may interfere with any service provided by Landlord or any tenant of the Project; (D) may reduce the leasable space in the Project; or (E) is not properly screened from the viewing public.

(b) **No Damage to Roof.** If installation of the Roof Equipment requires Tenant to make any roof cuts or perform any other roofing work, such cuts shall only be made to the roof area of the Building designated by Landlord and only in the manner designated in writing by Landlord; and any such installation work (including any roof cuts or other roofing work) shall be performed by Tenant, at Tenant's sole cost and expense by a roofing contractor authorized under the roof warranty and reasonably approved by Landlord. If Tenant or its agents shall otherwise cause any damage to the roof during the installation, operation, and removal of the Roof Equipment, such damage shall be repaired promptly at Tenant's expense and the roof shall be restored in the same condition it was in before the damage. Tenant shall not be entitled to any abatement or reduction in the amount of Rent payable under this Lease if for any reason Tenant is unable to use Roof Equipment. In no event whatsoever shall the

installation, operation, maintenance, or removal of the Roof Equipment by Tenant or its agents void, terminate, or invalidate any applicable roof warranty.

(c) **Protection.** The installation, operation, and removal of the Roof Equipment shall be at Tenant's sole risk. Tenant shall indemnify, defend, and hold Landlord harmless from and against any and all claims, costs, damages, liabilities and expenses (including, but not limited to, attorneys' fees) of every kind and description that may arise out of or be connected in any way with Tenant's installation, operation, or removal of the Roof Equipment, except to the extent resulting from the negligence or willful misconduct of Landlord or any Landlord Party.

(d) **Removal.** At the expiration or earlier termination of this Lease or the discontinuance of the use of the Roof Equipment by Tenant, Tenant shall, at its sole cost and expense, remove the Roof Equipment from the Project. Tenant shall leave the portion of the roof where the Roof Equipment was located in good order and repair, reasonable wear and tear excepted. If Tenant does not so remove the Roof Equipment, Tenant hereby authorizes Landlord to remove and dispose of the Roof Equipment and charge Tenant as Additional Rent for all costs and expenses incurred by Landlord in such removal and disposal. Tenant agrees that Landlord shall not be liable for any Roof Equipment or related property disposed of or removed by Landlord.

(e) **No Interference.** The Roof Equipment shall not interfere with the proper functioning of any telecommunications equipment or devices that have been installed or will be installed by Landlord or for any other tenant or future tenant of the Project. Landlord shall use commercially reasonable efforts to insure that the placement and operation of other telecommunications equipment on the rooftop of the Building does not interfere with the use and operation by Tenant of the Tenant's Roof Equipment existing at the time of installation of such other equipment, and shall impose and enforce upon other tenants or occupants of the Building installing roof equipment on the rooftop of the Building requirements similar to those contained in this Lease; provided, however, that: (i) Tenant shall make reasonable accommodations to its Roof Equipment and its location, and otherwise cooperate with Landlord's efforts to comply with this provision; and (ii) Landlord shall not be liable to Tenant if any such interference actually occurs, so long as Landlord is using commercially reasonable efforts as aforesaid, which efforts shall, to the extent reasonable, include relocation of Tenant's Roof Equipment in accordance with Section 42(f) below and/or relocation of such other equipment, and in any event, Landlord's failure to comply with this provision shall not constitute a Landlord default under this Lease.

(f) **Relocation.** Landlord shall have the right, at its expense and after 60 days prior notice to Tenant, to relocate the rooftop telecommunications equipment to another site on the roof of the 60 Binney Building as long as such site reasonably meets Tenant's sight line and interference requirements and does not unreasonably interfere with Tenant's use and operation of the Roof Equipment.

(g) **Access.** Landlord grants to Tenant the right of ingress and egress on a 24 hour 7 day per week basis to install, operate, and maintain the Roof Equipment. Before receiving access to the roof of the Building, Tenant shall give Landlord at least 24 hours' advance written or oral notice, except in emergency situations, in which case no notice shall be required to be given by Tenant if not practical and Tenant shall be permitted access to the roof upon contacting the individual(s) responsible for providing access during emergencies. Following such access Tenant shall give Landlord written notice of such access as soon as reasonably practicable. Landlord shall supply Tenant with the name, telephone, and pager numbers of the contact individual(s) responsible for providing access during emergencies.

(h) **Appearance.** If permissible by Legal Requirements, the Roof Equipment shall be painted the same color as the Building so as to render the Roof Equipment virtually invisible from ground level.

(i) **No Assignment.** The right of Tenant to use and operate the Roof Equipment shall be personal to Tenant and any assignees pursuant to a Permitted Assignment, and (i) no other person or entity shall have any right to use or operate the Roof Equipment, and (ii) Tenant shall not assign, convey, or otherwise transfer to any person or entity any right, title, or interest in all or any portion of the Roof Equipment, or the use and operation thereof.

43. **Miscellaneous**.

(a) **Notices**. All notices or other communications between the parties shall be in writing and shall be deemed duly given upon delivery or refusal to accept delivery by the addressee thereof if delivered in person, or upon actual receipt if delivered by reputable overnight guaranty courier, addressed and sent to the parties at their addresses set forth above. Landlord and Tenant may from time to time by written notice to the other designate another address for receipt of future notices.

(b) **Joint and Several Liability**. If and when included within the term "**Tenant**," as used in this instrument, there is more than one person or entity, each shall be jointly and severally liable for the obligations of Tenant.

(c) **Financial Information.** Tenant shall furnish Landlord with true and complete copies of: (i) Tenant's most recent audited annual financial statements within 90 days of the end of each of Tenant's fiscal years during the Term; and (ii) Tenant's most recent unaudited quarterly financial statements within 45 days of the end of each of Tenant's first three fiscal quarters of each of Tenant's fiscal years during the Term. Notwithstanding the foregoing: (x) Tenant shall not be obligated to provide the foregoing information at any time that Tenant is a public company listed on a nationally recognized securities exchange, and (y) at any time that Tenant is not a public company, Tenant may deliver the foregoing information subject to a confidentiality agreement in commercially reasonable form (provided that Landlord may furnish

such information to such other parties as Landlord may deem appropriate subject to the same confidentiality).

(d) **Recordation.** Except as set forth herein, neither this Lease nor a memorandum of lease shall be filed by or on behalf of Tenant in any public record. Either Landlord or Tenant may prepare and file, and upon request by the other party will execute, a memorandum of lease for recording with the Middlesex South Registry of Deeds. If required by applicable securities laws, Tenant may file with the SEC a copy of this Lease approved by Landlord as to which terms not required to be reported have been redacted (it being agreed that Landlord shall not object to those items required to be disclosed by the SEC).

(e) **Interpretation**. The normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Lease or any exhibits or amendments hereto. Words of any gender used in this Lease shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context otherwise requires. The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provision hereof, or in any way affect the interpretation of this Lease.

(f) **Not Binding Until Executed.** The submission by Landlord to Tenant of this Lease shall have no binding force or effect, shall not constitute an option for the leasing of the Premises, nor confer any right or impose any obligations upon either party until execution of this Lease by both parties.

(g) **Limitations on Interest.** It is expressly the intent of Landlord and Tenant at all times to comply with applicable law governing the maximum rate or amount of any interest payable on or in connection with this Lease. If applicable law is ever judicially interpreted so as to render usurious any interest called for under this Lease, or contracted for, charged, taken, reserved, or received with respect to this Lease, then it is Landlord's and Tenant's express intent that all excess amounts theretofore collected by Landlord be credited on the applicable obligation (or, if the obligation has been or would thereby be paid in full, refunded to Tenant), and the provisions of this Lease immediately shall be deemed reformed and the amounts thereafter collectible hereunder reduced, without the necessity of the execution of any new document, so as to comply with the applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder.

(h) **Choice of Law.** Construction and interpretation of this Lease shall be governed by the internal laws of the Commonwealth of Massachusetts, excluding any principles of conflicts of laws.

(i) **Time; Business Days**. Time is of the essence as to the performance of Landlord's and Tenant's obligations under this Lease. As used herein, "**business day**" shall

mean any day on which banks are open in the Commonwealth of Massachusetts and which is not a Saturday, Sunday or legal holiday in the Commonwealth of Massachusetts.

(j) **OFAC.** Tenant, and all beneficial owners of Tenant, are currently (a) in compliance with and shall at all times during the Term of this Lease remain in compliance with the regulations of the Office of Foreign Assets Control (" **OFAC**") of the U.S. Department of Treasury and any statute, executive order, or regulation relating thereto (collectively, the "**OFAC Rules**"), (b) not listed on, and shall not during the term of this Lease be listed on, the Specially Designated Nationals and Blocked Persons List maintained by OFAC and/or on any other similar list maintained by OFAC or other governmental authority pursuant to any authorizing statute, executive order, or regulation, and (c) not a person or entity with whom a U.S. person is prohibited from conducting business under the OFAC Rules.

(k) **Incorporation by Reference.** All exhibits and addenda attached hereto are hereby incorporated into this Lease and made a part hereof. If there is any conflict between such exhibits or addenda and the terms of this Lease, such exhibits or addenda shall control.

(l) **No Accord and Satisfaction.** No payment by Tenant or receipt by Landlord of a lesser amount than the monthly installment of Base Rent or any Additional Rent will be other than on account of the earliest stipulated Base Rent and Additional Rent, nor will any endorsement or statement on any check or letter accompanying a check for payment of any Base Rent or Additional Rent be an accord and satisfaction. Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such Rent or to pursue any other remedy provided in this Lease.

(m) **Hazardous Activities.** Notwithstanding any other provision of this Lease, Landlord, for itself and its employees, agents and contractors, reserves the right to refuse to perform any repairs or services in any portion of the Premises which, pursuant to Tenant's routine safety guidelines, practices or custom or prudent industry practices, require any form of protective clothing or equipment other than safety glasses. In any such case, Tenant shall contract with parties who are acceptable to Landlord, in Landlord's reasonable discretion, for all such repairs and services, and Landlord shall, to the extent required, equitably adjust Tenant's Share of Operating Expenses in respect of such repairs or services to reflect that Landlord is not providing such repairs or services to Tenant.

[Signatures on next page]

IN WITNESS WHEREOF, Landlord and Tenant have executed this Lease as of the day and year first above written.

TENANT:

bluebird bio, inc.,
a Delaware corporation

By: /s/ Jason F. Cole
Name: Jason F. Cole
Its: SVP, General Counsel

LANDLORD:

ARE-MA REGION NO. 40, LLC,
a Delaware limited liability company

By: ALEXANDRIA REAL ESTATE EQUITIES, L.P., a Delaware limited partnership, managing member

By: ARE-QRS CORP.,
a Maryland corporation,
general partner

By: /s/ Eric S. Johnson
Name: Eric S. Johnson
Its: SVP RE Legal Affairs

EXHIBIT A

DESCRIPTION OF PREMISES

[***]

EXHIBIT A-1

PRELIMINARY MEASUREMENTS

[***]

EXHIBIT B TO LEASE

DESCRIPTION OF PROJECT

A certain parcel of land in Cambridge, Middlesex County, Massachusetts, bounded and described as follows:

Commencing at the intersection of the northerly line of William "Doc" Linskey Way and the easterly line of Second Street, said point being the southwest corner of the parcel herein described:

Thence Running: N 09°27'26" E, along said easterly line of Second Street, a distance of 150.10 feet, to a point of curvature;

Thence Running: Northeasterly on a curve to the right, having a radius of 10.00 feet, an arc distance of 15.72 feet, to a point of tangency on the southerly line of relocated Binney Street;

Thence Running: S 80°28'24" E, along said southerly line of relocated Binney Street, a distance of 370.14 feet, to a point of curvature;

Thence Running: Southeasterly, on a curve to the right, having a radius of 20.00 feet, an arc distance of 31.44 feet, to a point of tangency on the westerly line of First Street;

Thence Running: S 09°36'28" W, along said westerly line of First Street, a distance of 135.87 feet to a point;

Thence Running: N 88°05'44" W, along the northerly line of William "Doc" Linskey Way, a distance of 30.27 feet to a point;

Thence Running: N 80°30'11" W, along said northerly line of William "Doc" Linskey Way, a distance of 369.76 feet, to the Point of Beginning.

The above described parcel contains 63,829 square feet, more or less.

The above described parcel is the same premises conveyed by deed from First Street Parking LLC to ARE-MA Region No. 40, LLC, dated October 11, 2007, recorded with Middlesex South Registry of Deeds in Book 50214, Page 167.

Said premises are subject to and have the benefit of the following:

1. Notice of Decision by the Cambridge Planning Board, recorded with said Deeds in Book 54930, Page 202, as amended by Notice of Decision by the Cambridge Planning Board, recorded with said Deeds in Book 65330, Page 382.

2. Declaration of Covenants and Restrictions dated as of August 23, 2013, recorded with said Deeds in Book 62514, Page 201, as amended by First Amendment to Declaration of Covenants and Restrictions dated as of April 21, 2015, recorded with said Deeds in Book 65330, Page 381.

3. Notice of Lease naming Sanofi Services, Inc. as Tenant dated March 25, 2015 recorded with said Deeds in Book 65194 Page 311

4. Garage Parking Easement Agreement between Landlord as Grantor, and ARE-MA Region No. 45, as Grantee, dated as of May 28, 2015, recorded with said Deeds in Book 65584, Page 404.

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT WERE OMITTED AND REPLACED WITH "[***]". A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECRETARY OF THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO AN APPLICATION REQUESTING CONFIDENTIAL TREATMENT PURSUANT TO RULE 24B-2 PROMULGATED UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

EXHIBIT B-1 TO LEASE

FLOOR PLANS SHOWING 50 BINNEY BUILDING AND 60 BINNEY BUILDING

[***]

EXHIBIT B-2

DESCRIPTION OF CAMPUS

See attached plan

EXHIBIT B-2 - DESCRIPTION OF CAMPUS

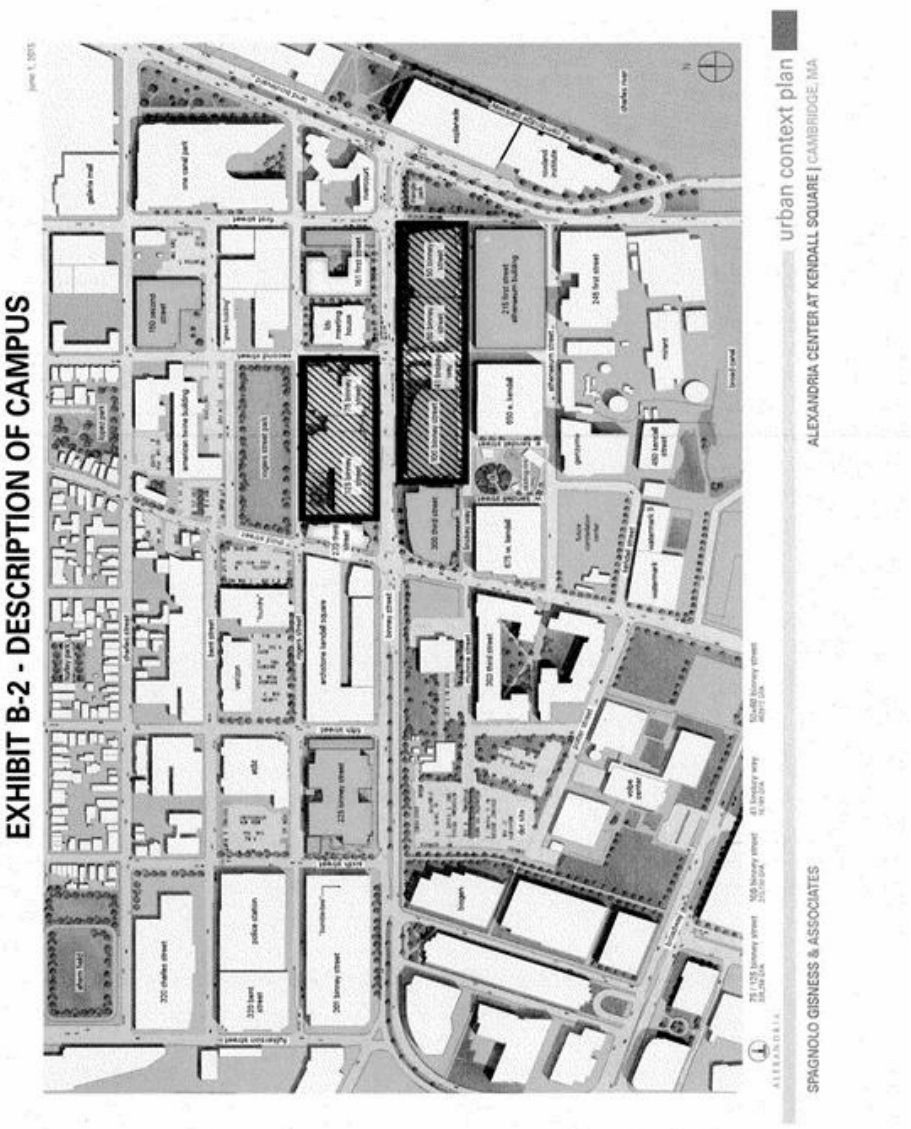

EXHIBIT C TO LEASE

WORK LETTER (TENANT BUILD)

This Work Letter (this "Work Letter") is made and entered into as of _____, 2015, by and between ARE-MA REGION NO. 40, LLC, a Delaware limited liability company ("Landlord"), and BLUEBIRD BIO, INC., a Delaware corporation ("Tenant"), and is attached to and made a part of that certain Lease Agreement dated as of the date hereof (as the same may be amended, amended and restated, supplemented or otherwise modified from time to time, the "Lease"), by and between Landlord and Tenant for the Building and Premises at 60 Binney Street in Cambridge, Massachusetts. All capitalized terms used but not otherwise defined herein shall have the meanings given them in the Lease.

1 GENERAL REQUIREMENTS

1.1 Authorized Representatives. Landlord designates as Landlord's authorized representatives (each, "Landlord's Authorized Representative"), Tom Andrews, Joseph Maguire, and Andrew Reinach, each of whom is authorized to issue to Tenant and to initial and sign, as applicable, all plans, drawings, approvals and Changes (as defined below) pursuant to this Work Letter. Tenant shall not be obligated to respond to or act upon any such item until such item has been initialed or signed (as applicable) by any of Landlord's Authorized Representatives. Landlord may change Landlord's Authorized Representatives upon two (2) business days' prior written notice to Tenant (which notice may be given by email to sgilroy@bluebirdbio.com and fletcher@fletchermartincorp.com (the "Tenant Email Notice Parties")). A Landlord's Authorized Representative shall personally attend design and construction meetings for the Non-TI Project Improvements and, to address Landlord's concerns only, design and construction meetings for the Tenant Improvements (as each such term is defined below).

1.1.1 Tenant designates as Tenant's authorized representatives (each, " Tenant's Authorized Representative "), Stacy Gilroy and Michael Fletcher, each of whom is authorized to issue to Landlord, and to initial and sign, as applicable, all plans, drawings, approvals and Changes pursuant to this Work Letter. Landlord shall not be obligated to respond to or act upon any such item until such item has been initialed or signed (as applicable) by Tenant's Authorized Representative. Tenant may change Tenant's Authorized Representative upon two (2) business days' prior written notice to Landlord (which notice may be given by email to tandrews@are.com, jmaguire@are.com and areinach@are.com (the "Landlord Email Notice Parties")).

1.2 Applicable Response Period. For purposes of this Work Letter, the "Applicable Response Period" shall mean the applicable number of days for a party to respond to a submission or a request for an approval as provided in this Work Letter, or, if no such period is set forth in this Work Letter, five (5) business days after receipt of the submission or request for approval.

1.3 Consents. Any refusal of consent by Landlord or Tenant shall specify in reasonable detail the reasons for such disapproval. Notwithstanding anything contained herein to the contrary, no request shall be "deemed approved" unless the request for consent specifies in all capital letters as follows: "CONSENT TO THE MATTERS SET FORTH HEREIN SHALL BE DEEMED GIVEN IF NO RESPONSE IS PROVIDED WITHIN [____ DAYS; *specify relevant number of days (which shall be no less than the Applicable Response Period)*] OF THE DATE HEREOF".

2 LANDLORD'S CONSTRUCTION OF THE NON-TI PROJECT IMPROVEMENTS

2.1 Landlord shall construct the following improvements on the Project (collectively, the "Non-TI Project Improvements" or "Shell, Core and Site Improvements"; also referenced in the Lease as "Landlord's Work"): (i) shell and core improvements for the Building (the "Shell and Core Improvements"); and (ii) all landscaping, plaza areas, walkways, driveways, sidewalks, and other improvements for the Project (the "Site Improvements"), in accordance with the Shell, Core and Site Construction Documents (as defined below). Landlord shall construct the Non-TI Project Improvements at its sole cost and expense, except as otherwise expressly set forth herein. The cost of the Tenant Improvements to be undertaken by Tenant shall be paid for in accordance with Section 6 below.

2.2 Non-TI Project Improvements. Landlord's construction of the Non-TI Project Improvements shall be effected by contractors selected and retained by Landlord, pursuant to the Shell, Core and Site Construction Documents, as the same may be further modified as provided in Sections 2.3 and 2.4 below, to include any Landlord Modifications and Approved Tenant Modifications (as each such term is defined below) and/or as required by any applicable Governmental Authorities.

2.2.1 Project Architect. Landlord has engaged Spagnolo Gisness & Associates as the architect for the Non-TI Project Improvements (the "Project Architect").

2.2.2 Construction Manager for Non-TI Project Improvements. Landlord has engaged Turner Construction Company as the construction manager for the construction of the Non-TI Project Improvements ("Construction Manager").

2.2.3 Interim BIM Set. Prior to execution of this Lease, Landlord and Tenant have approved the Interim BIM Set of plans (the "Interim BIM Set") and the Landlord/Tenant Responsibility Matrix, which is attached hereto as Schedule 2.

2.2.4 Shell, Core and Site Construction Documents. Landlord furnished a Shell, Core and Site Construction Documents set (the "Shell, Core and Site Construction Set") to Tenant for its review and approval on August 17, 2015, which review and approval shall be subject to the provisions of this Section 2.2.4. Tenant shall, on or before seven (7) days after the date of the Lease, review and either approve or disapprove the same. Tenant's failure to respond within on or before seven (7) days after the date of the Lease shall be deemed approval by Tenant of the Shell, Core and Site Construction Set. Tenant shall have no right to disapprove any portion of the Shell, Core and Site Construction Set which is materially consistent with the Interim BIM Set approved or deemed approved by

Tenant, except that Tenant may disapprove any portion of the Shell, Core and Site Construction Set which reflects a factual inaccuracy or which Tenant believes in good faith is materially inconsistent with the Interim BIM Set, such that the inconsistency would have an adverse effect on Tenant's use or occupancy of the Premises as contemplated under the Lease. If Tenant timely and properly disapproves any portion of the Shell, Core and Site Construction Set: (A) Landlord and Tenant shall reasonably and expeditiously cooperate to mutually correct such factual inaccuracy or inconsistency or eliminate or mitigate such adverse effect, as applicable; (B) any delay in Substantial Completion of the Project Improvements resulting from such disapproval shall not constitute a Tenant Delay; and (C) the Delivery Date actually affected by any such delay shall be extended on a day-for-day basis for the period such Delivery Date is so affected. The approved or deemed approved Shell, Core and Site Construction Set shall be hereinafter referenced as the "Shell, Core and Site Construction Documents," and the list of plans included in such Shell, Core and Site Construction Documents shall be inserted and attached hereto as Schedule 2.2.3.

2.3 Landlord Modifications to Shell, Core and Site Construction Documents.

It is anticipated that prior to and during construction of the Non-TI Project Improvements, Landlord may reasonably require changes to the Shell, Core and Site Construction Documents as Landlord shall desire and/or as may be required to obtain occupancy permits and other governmental approvals and comply with Legal Requirements. Landlord shall be entitled, from time to time, to make any such changes to the Shell, Core and Site Construction Documents (collectively, the "Landlord Modifications"), without Tenant's consent, so long as such Landlord Modifications, if implemented, would not: (i) effect material changes to the design of the Shell, Core and Site Improvements previously approved by Tenant (including the exterior appearance thereof); or (ii) adversely affect Tenant's contemplated use or occupancy of the Building or the Project for the Permitted Uses; or (iii) delay the delivery of the Premises with the Non-TI Project Improvements complete beyond the Target Delivery Date; or (iv) increase the costs or delay the completion of the Non-TI Project Improvements (collectively, an "Adverse Condition"). In the event any such Landlord Modifications, if implemented, would create an Adverse Condition, Landlord shall notify Tenant of such Landlord Modifications prior to implementation thereof (which notice shall include Landlord's description of the Adverse Condition, and the adverse effects and impacts which Landlord believes comprise such Adverse Condition to the extent then known or reasonably anticipated by Landlord), and Tenant shall, within five (5) business days after receipt of Landlord's notice, notify Landlord of Tenant's approval or reasonable disapproval thereof with specified reasons for such disapproval. Tenant's failure to notify Landlord of its approval or reasonable disapproval within such five (5) business day period shall be deemed Tenant's approval of such proposed Landlord Modifications. For purposes of determining whether a Landlord Modification would create an Adverse Condition pursuant to the foregoing, an "Adverse Condition" shall also include any delays in Substantial Completion of the Non-TI Project Improvements beyond the Target Delivery Date specified in the Lease; provided, however, to the extent a Landlord Modification is necessary to comply with Legal Requirements enacted after the date of the Lease or is required by any applicable Governmental Authorities in connection with its enforcement of Legal Requirements enacted after the date of the Lease, such Landlord Modification shall not constitute an Adverse Condition. In the event such Landlord Modifications, if implemented, would increase the costs of the Tenant Improvements, then Landlord and Tenant shall consult and coordinate on ways to minimize the effect of such

Landlord Modification on the cost of the Tenant Improvements. If such Landlord Modification was desired by Landlord but not required to obtain occupancy permits and other governmental approvals or to comply with Legal Requirements (a "Landlord Desired Modification") and after such consultation and coordination the effect of such Landlord Desired Modification will be to increase the costs of the Tenant Improvements, such increase in costs shall be borne by Landlord and not counted against the TI Allowance (as defined in Section 6.2).

2.4 Tenant-Requested Modifications to Shell, Core and Site Construction Documents.

Except as provided below in this Section 2.4, Tenant shall have no right to make or request, and Landlord shall, in its sole discretion, have no obligation to approve and may disapprove, any changes to the Shell, Core and Site Construction Documents desired by Tenant. Notwithstanding the foregoing, Tenant may request from time to time that Landlord make reasonable changes to the Shell, Core and Site Construction Documents pertaining to the functional operation and use of the Premises, including, without limitation, ventilation shafts, additional plumbing and waste lines, grease interceptors, humidification systems and structural support (such requested modifications shall be referred to collectively herein, as the "Tenant-Requested Modifications"). Landlord agrees to incorporate any such permitted Tenant-Requested Modifications into the Shell, Core and Site Construction Documents so long as the same: (A) do not affect the exterior appearance of the Building or the exterior of the site; (B) would not result in a materially adverse effect on the major Building systems or the operation and maintenance thereof; (C) comply with Legal Requirements; and (D) will not delay the Delivery Date or date of Substantial Completion of the Non-TI Project Improvements from the dates set forth in the Lease, unless, with respect to a delay of no more than 30 days in either the Delivery Date or the date of Substantial Completion of the Non-TI Project Improvements, as applicable, as part of Landlord's approval of any such Tenant-Requested Modifications, Tenant agrees in writing that a delay in the Delivery Date and/or date of Substantial Completion of the Non-TI Project Improvements due to the Tenant-Requested Modifications (as reasonably determined by the Construction Manager at the time of approval of the Tenant-Requested Modification) will constitute a Tenant Delay, provided that with respect to any delay in excess of 30 days in either the Delivery Date or the date of Substantial Completion of the Non-TI Project Improvements, Landlord's decision to incorporate such Tenant-Requested Modifications shall be in Landlord's sole discretion.

No deduction from the rentable square footage of the Premises for purposes of determination of Base Rent payable under the Lease, which would otherwise apply under the Lease shall be made as a result of any vertical penetrations required by or as a part of such Tenant-Requested Modification.

2.5 Landlord Notification

If Landlord disapproves Tenant's request to incorporate any Tenant-Requested Modifications due to the failure of any of the applicable conditions set forth in Section 2.4 above, Landlord shall notify Tenant of such disapproval within ten (10) days after Landlord's receipt of Tenant's notice requesting that Landlord implement such items, which notice shall specify in reasonable detail the reasons for such disapproval. Landlord's failure to notify Tenant of its approval or disapproval within such ten (10) day period shall be deemed Landlord's disapproval of such proposed Tenant-Requested Modifications. If Landlord approves such proposed

Tenant-Requested Modifications and if Landlord reasonably believes that the Tenant-Requested Modification will increase construction costs or result in a delay in design or construction of the Project Improvements, Landlord shall, within a reasonable time after receipt of Tenant's request for a Tenant-Requested Modification in light of the scope of the request, provide to Tenant an estimate of costs for the design, permitting and construction of such Tenant-Requested Modification. After delivery of the estimate, Tenant shall have the right to revoke its request for the Tenant-Requested Modification for five (5) business days after delivery of such estimate.

2.6 Approved Tenant Modifications.

Any Tenant-Requested Modification which Landlord is required to incorporate into the Shell, Core and Site Construction Documents shall be referred to herein as an "Approved Tenant Modification". Landlord shall cause the design and construction of the Approved Tenant Modification to be performed at Tenant's sole cost and expense (to the extent such Approved Tenant Modification results in increased costs of construction), which costs shall include, without limitation: (A) all design, permitting and construction costs; and (B) all costs incurred by Landlord with respect to any delays in the design and construction of the Non-TI Project Improvements to the extent caused by, relating to or arising out of such Approved Tenant Modifications (collectively, the "Tenant Modifications Delays"). Such costs shall constitute a "TI Cost" for the purpose of Section 6 below.

2.7 Delivery Date; Substantial Completion of the Non-TI Project Improvements.

(a) For the purposes of this Work Letter, the term "Delivery Date" shall mean the date one (1) business day following the date Landlord has delivered to Tenant a certification from the Project Architect which confirms that substantial completion of the windows and curtain wall (not including gaskets, trim pieces, pressure plates, caulking, flashing and similar components associated therewith), and the roof has occurred such that the Building is suitable for the commencement of construction of the Tenant Improvements (provided that planned openings for such elements as the hoist, material access, egress and other construction functions will remain). Landlord agrees to use commercially reasonable efforts to notify Tenant of the date that Landlord reasonably expects to be the Delivery Date no later than fourteen (14) days prior to such date. Such notice may be sent via email to the Tenant Email Notice Parties.

(b) For purposes of this Work Letter, the term "Substantially Completed" or "Substantial Completion" with regard to the Shell and Core Improvements shall mean the later to occur of (i) the substantial completion of construction of the Shell and Core Improvements, as certified by the Project Architect, pursuant to and evidenced by a fully executed AIA G704 form signed by Landlord, Construction Manager and the Project Architect, with the exception of any Punch List Items (as defined below). Landlord and Tenant shall conduct a final walk-through of the Shell and Core Improvements not earlier than ten (10) days prior to the expected date of Substantial Completion of the Shell and Core Improvements, as specified by written notice from Landlord to Tenant, which notice may be given by email to the Tenant Email Notice Parties, and shall each prepare a punch list for the Shell and Core Improvements. Landlord and Tenant shall meet in good faith to create one unified list of Punch List Items. Punch List Items shall be diligently completed by Landlord not later than thirty (30) days after compilation of the unified list, provided that Punch List Items which arise due to a delayed delivery of such Punch List

Item or material portion thereof shall be completed no later than ninety (90) days after Substantial Completion (except for items which cannot be completed until the Tenant Improvements are completed by Tenant, or for items affected by seasonal conditions, each of which shall be completed as soon as practicable); and (ii) the issuance by the City of Cambridge of a certificate of occupancy for the Shell and Core (unless such certificate is not available due to requirements of the Tenant Improvements which preclude its issuance, in which case a certificate of occupancy shall not be a condition precedent to Substantial Completion, but Landlord shall obtain such a certificate when such requirements have been satisfied). The term "Punch List Items" shall mean minor items of completion, correction or repair with respect to the Non-TI Project Improvements, which, by their nature, will not interfere with, or impair in any material respect, Tenant's use or occupancy of the Project for the purposes contemplated under the Lease, and which will not delay Tenant's commencement of business operations in the Premises.

After Substantial Completion of the Landlord's Work, Landlord shall turn over to Tenant all copies of applicable operating and maintenance manuals, keys, codes, "as built" plans in "hard" and electronic formats, warranties, contracts and other materials necessary for Tenant's operation and occupancy of the Premises. In addition, Landlord shall cause the Construction Manager to provide training for, and invite Tenant to participate in, the commissioning of Building equipment and systems.

Following the Substantial Completion of the Shell and Core Improvements Landlord shall use commercially reasonable efforts to complete any remaining Site Improvements that are not complete as of the date of Substantial Completion of the Shell and Core Improvements as soon as reasonably practicable, which for all seasonal components of the Site Improvements shall be prior to the end of the first full planting season that begins after the date of Substantial Completion of the Shell and Core Improvements.

3 TENANT IMPROVEMENTS

As used in this Work Letter, "Tenant Improvements" shall mean and refer to all improvements to the Premises desired by Tenant of a fixed and permanent nature. Other than funding the TI Allowance in accordance with Section 6 below, Landlord shall not have any obligation whatsoever with respect to the finishing of the Premises for Tenant's use and occupancy. At the time of approval of the Approved TI Construction Documents (as defined below), Landlord and Tenant shall mutually agree upon the schedule for performance and completion by Tenant of the Tenant Improvements (as the same may be modified from time to time upon the mutual, reasonable agreement of Landlord and Tenant subject to, and in accordance with, Section 6.6 below), the "TI Construction Schedule"). All plans for the Tenant Improvements shall be prepared utilizing the same BIM platform as used by Landlord for the Non-TI Project Improvements, which BIM platform is more specifically described in Schedule 3 attached to this Work Letter.

3.1 Selection of Architects, Consultants and Contractors for Tenant Improvements

Landlord and Tenant hereby acknowledge and agree that the general contractor, architect (the "TI Architect"), the MEP consultant, structural engineer and other consultants for the Tenant Improvements shall be selected by Tenant, subject to Landlord's approval, which approval shall

not be unreasonably withheld, conditioned or delayed. No later than September 30, 2015, Tenant shall notify Landlord if it selects the general contractor for the Tenant Improvements (Turner Construction Company) to be the Construction Manager for the Non-TI Project Improvements (a "CM Build Election"), or if selects a general contractor for the Tenant Improvements other than Turner Construction Company (which general contractor shall be subject to the approval of Landlord as aforesaid) (a "Non-CM Build Election.") In all events, all subcontractors shall be selected by Tenant, using subcontractors to be selected by Tenant, subject to Landlord's approval, which approval shall not be unreasonably withheld, conditioned or delayed. Landlord shall be named a third party beneficiary of any contract entered into by Tenant with the TI Architect, the construction contract between Tenant and the general contractor and the subcontracts thereunder, any contract with any consultant who performs services directly for Tenant, and of any warranty made by any contractor, subcontractor, or consultant.

3.2 Tenant's Design Drawings.

Tenant shall deliver to Landlord schematic drawings and outline specifications (the "TI Design Drawings") detailing Tenant's requirements for the Tenant Improvements on a schedule determined by Tenant. Not more than fourteen (14) days thereafter, Landlord shall deliver to Tenant the written objections, questions or comments of Landlord with regard to the TI Design Drawings. The parties agree that if Landlord only objects to a specific component or portion of the TI Design Drawings, then to the extent practical, Tenant and the TI Architect may (but shall not be required to) move forward with TI Construction Drawings (as defined below) as to the components and/or portion of the TI Design Drawings not objected to by Landlord. Tenant shall cause the TI Design Drawings to be revised to address such written comments and shall resubmit said drawings to Landlord for approval. Not more than ten (10) days thereafter, Landlord shall deliver to Tenant any written objections, questions or comments of Landlord with regard to the responses by Tenant to Landlord's prior written objections, questions or comments and any other revisions made by Tenant to the TI Design Drawings. Such process shall continue until Landlord has approved the TI Design Drawings.

3.3 Working Drawings.

Following the approval of the TI Design Drawings by Landlord, Tenant shall cause the TI Architect to prepare and deliver to Landlord for review and comment construction plans, specifications and drawings for the Tenant Improvements ("TI Construction Drawings"), which TI Construction Drawings shall be prepared substantially in accordance with the TI Design Drawings. Tenant shall be solely responsible for ensuring that the TI Construction Drawings reflect Tenant's requirements for the Tenant Improvements. Landlord shall deliver its written comments on the TI Construction Drawings to Tenant not later than ten (10) business days after Landlord's receipt of the same; provided, however, that Landlord may not disapprove any matter that is consistent with the TI Design Drawings. Tenant and the TI Architect shall consider all such comments in good faith and shall, within ten (10) business days after receipt, notify Landlord how Tenant proposes to respond to such comments. Any disputes in connection with such comments shall be resolved in accordance with Section 3.4 hereof. Provided that the design reflected in the TI Construction Drawings is consistent with the TI Design Drawings, Landlord shall approve the TI Construction Drawings submitted by Tenant. The TI Construction Drawings, as approved by Landlord, are herein referred to as the "Approved TI Construction

Documents". Once approved by Landlord, subject to the provisions of Section 3.8 below, Tenant shall not materially modify the Approved TI Construction Documents, except as may be reasonably required in connection with the issuance of the TI Permit (as defined in Section 3.7 below).

3.4 Approval and Completion.

If, after Landlord's review of the second submission under Section 3.2, any dispute regarding the design of the Tenant Improvements is not settled within ten (10) business days after notice of such dispute is delivered by one party to the other, Tenant may make the final decision regarding the design of the Tenant Improvements, provided: (i) Tenant acts reasonably and such final decision is either consistent with or a compromise between Landlord's and Tenant's positions with respect to such dispute; (ii) that all costs and expenses resulting from any such decision by Tenant shall be payable as provided in Section 6 below; and (iii) Tenant's decision will not affect the Non-TI Project Improvements, including without limitation, the structural components of the Building or any Building systems (in which case Landlord shall make the final decision in its sole discretion, except with respect to any Building systems located wholly within and exclusively serving the Premises, for which Landlord's decision shall be in its reasonable discretion). Any changes to the Approved TI Construction Documents requested by Tenant shall be processed as provided in Section 3.8 hereof.

3.5 Landlord's Review of Tenant Improvement Plans.

Any review of the TI Design Drawings or the TI Construction Drawings by Landlord, Landlord's Authorized Representative, the Project Architect or anyone else acting on Landlord's behalf, including without limitation construction advisors, design professionals, contractors and subcontractors (collectively, "Landlord's Agents"), shall be for Landlord's sole purpose and shall not imply Landlord's review of the same (or obligate Landlord to review the same) for quality, design, compliance with Legal Requirements or other like matters. Neither Landlord, Landlord's Authorized Representatives nor any of Landlord's Agents shall have any liability whatsoever in connection with, and shall not be responsible for any omissions or errors contained in the TI Design Drawings, TI Construction Drawings or Approved TI Construction Documents (collectively, the "Tenant Plans") as a result of any inspections or review thereof.

3.6 Compliance with LEED Standards.

All plans prepared by Tenant and the TI Architect for the Tenant Improvements shall comply with the LEED standards attached hereto as Schedule 3.6. Landlord shall design and construct the Non-TI Project Improvements to be certifiable to a LEED-Core and Shell Silver level.

3.7 Performance of Tenant Improvements.

(a) Commencement and Permitting of the Tenant Improvements. Tenant shall commence construction of the Tenant Improvements upon obtaining and delivering to Landlord a building permit issued by the City of Cambridge (the "TI Permit") authorizing the construction of the Tenant Improvements, consistent with the Approved TI Construction Documents, and shall thereafter diligently prosecute the same to completion in accordance with the TI

Construction Schedule, provided that if Tenant has made the CM Build Election, no such construction shall commence until the Delivery Date; and provided that if Tenant has made the Non-CM Build Election, no such construction shall commence until Landlord has Substantially Completed the Shell and Core Improvements. The cost of obtaining the TI Permit shall be payable as provided in Section 6 below. Prior to the commencement of the Tenant Improvements, Tenant shall deliver to Landlord a copy of all contracts with Tenant's contractors (including the TI Architect), and certificates of insurance from any contractor performing any part of the Tenant Improvement evidencing industry standard commercial general liability, automotive liability, "builder's risk", and workers' compensation insurance. Tenant shall cause the general contractor to provide a certificate of insurance naming Landlord, Alexandria Real Estate Equities, Inc., and Landlord's lender (if any) as additional insureds for the general contractor's liability coverages required above. In addition, Tenant shall provide to Landlord a copy of the professional liability and commercial general liability insurance policies of the TI Architect.

(b) Selection of Materials, Etc. Where more than one type of material or structure is indicated on the Approved TI Construction Documents, the decisions regarding selection of which type of material or structure among those shown will be within Tenant's reasonable discretion if the matter concerns the Tenant Improvements, and within Landlord's sole and absolute subjective discretion if the matter concerns the structural components of the Building or any Building system.

(c) Tenant Liability. Tenant shall be responsible for correcting any deficiencies or defects in the Tenant Improvements.

(d) Substantial Completion of the Tenant Improvements. Tenant shall diligently prosecute and substantially complete or cause to be substantially completed the Tenant Improvements in a good and workmanlike manner, in accordance with the TI Permit and Tenant's contracts, subject, in each case, to Minor Variations (as defined below) and normal "punch list" items of a non-material nature which do not interfere with the use of the Premises ("TI Substantial Completion" or "TI Substantially Complete") in accordance with the TI Construction Schedule. Tenant shall obtain and deliver to Landlord a temporary or permanent certificate of occupancy for the Tenant Improvements as a condition precedent to TI Substantial Completion; provided, however, that if a temporary certificate of occupancy is delivered to Landlord, Tenant will use diligent efforts to obtain and deliver to Landlord a permanent certificate of occupancy as soon as is reasonably practical but in any event within thirty (30) of issuance of the temporary certificate of occupancy. Upon TI Substantial Completion, Tenant shall require the TI Architect and the general contractor to execute and deliver, for the benefit of Tenant and Landlord, a Certificate of Substantial Completion in the form of the American Institute of Architects ("AIA") document G704. For purposes of this Work Letter, "Minor Variations" shall mean any modifications reasonably required: (i) to comply with all applicable Legal Requirements and/or to obtain or to comply with any required permit (including the TI Permit); (ii) to comport with good design, engineering, and construction practices which are not material; or (iii) to make reasonable adjustments for field deviations or conditions encountered during the construction of the Tenant Improvements.

3.8 Changes to the Tenant Improvements

Any changes to the Approved TI Construction Documents (each, a "Change") shall be requested and instituted in accordance with the provisions of this Section 3.8 and shall be subject to the written approval of Landlord in accordance with this Work Letter.

3.8.1 Change Request. Tenant may request Changes to the Approved TI Construction Documents by notifying Landlord in writing in substantially the same form as the AIA G701 Change Order form (a "Change Request"), which Change Request from Tenant shall detail the nature and extent of any requested Changes, including (a) the Change, (b) the estimated incremental cost of the Change and (c) any modification of the Approved TI Construction Documents necessitated by the Change. Change Requests shall be signed by Tenant's Authorized Representative. No deduction from the rentable square footage of the Premises for purposes of determination of Base Rent payable under the Lease, which would otherwise apply under the Lease, shall be made as a result of any vertical penetrations required by or as a part of such Change. In the event that Change Request(s) requested by Tenant will cause a delay to the Delivery Date or the date of Substantial Completion of the Non-TI Project Improvements as reasonably determined at the time of approval of the Tenant-Requested Modification by Landlord, such Change Request, if approved pursuant to Section 3.8.2 below, shall specify the number of days of such delay and the same shall constitute a Tenant Delay. Any costs related to a Change for which Tenant is responsible under this Work Letter shall be reimbursed by Tenant to Landlord in accordance with the submission of monthly invoices from Landlord pursuant to the terms of this Work Letter in proportion to completion of such work.

3.8.2 Approval of Changes. All Change Requests shall be subject to Landlord's prior written approval, which approval shall not be unreasonably withheld, conditioned or delayed. Landlord shall have five (5) business days after receipt of a Change Request to notify Tenant in writing of Landlord's decision either to approve or object to the Change Request. Landlord's failure to respond within such five (5) business day period shall be deemed approval by Landlord.

4 TENANT DELAYS

4.1.1 As used herein and in the Lease, "Tenant Delay" shall mean any actual delay in Landlord's achievement of the Delivery Date or the date of Substantial Completion of the Non-TI Project Improvements as a result of any one or more of the following: (i) Tenant's failure to respond within time limits specified in this Work Letter as to matters requiring Tenant's approval unless such failure to respond is deemed approval or disapproval of such matter pursuant to the terms of this Work Letter or is due to the fault or delay of Landlord; (ii) Tenant-Requested Modifications, calculated as the number of days to the extent actually caused by such Tenant-Requested Modifications; (iii) any actual delays caused by Tenant or Tenant's Agents (as defined in Section 5.3.1 below), calculated as the number of days to the extent caused by Tenant or Tenant's Agents; and/or (iv) Tenant's failure to timely comply with its obligations under this Work Letter and/or the Lease.

4.1.2 Landlord shall notify Tenant of any claimed Tenant Delay as soon as practical after Landlord becomes aware (which notice may be by email to Tenant Email Notice Parties) and shall use commercially reasonable efforts to mitigate the effects of any claimed Tenant Delay, and shall provide reasonable information and alternatives to Tenant to assist in such mitigation efforts; provided, however, Landlord shall not be required to incur any material cost or incur any material liability in seeking to mitigate any Tenant Delay.

5 CERTAIN REQUIREMENTS APPLICABLE TO CONSTRUCTION OF THE NON-TI PROJECT IMPROVEMENTS

Landlord shall comply with the following requirements in connection with its construction of the Non-TI Project Improvements:

5.1 Condition of Construction

Landlord hereby agrees to complete the construction of the Non-TI Project Improvements in accordance with the Shell, Core and Site Construction Documents, in a first-class and workmanlike manner, and in compliance with applicable Legal Requirements in effect as of the date issuance of the building permit therefor, free of material defects and otherwise in good condition and working order. Upon request of Tenant, Landlord shall provide Tenant with updates as to progress of construction of the Non-TI Project Improvements, and in addition Landlord and Tenant shall hold such joint team meetings as reasonably requested by either party prior to and during construction. Landlord's Construction Representative and Tenant's Construction Representative shall meet weekly during the course of the construction of the Tenant Improvements.

5.2 Construction Warranties and Insurance

Landlord shall incorporate only new materials and equipment into the construction of the Non-TI Project Improvements. Landlord warrants and guarantees that: (i) the Non-TI Project Improvements will be completed in substantial accordance with the approved Shell, Core and Site Construction Documents (as the same may be modified by Landlord Modifications or Tenant-Requested Modifications approved hereunder), and free of defective workmanship and materials; and (ii) the Non-TI Project Improvements shall be free of design defects ("Landlord's Warranty"). Landlord's Warranty shall survive and remain in effect for a period of one (1) year after the date of Substantial Completion of the Non-TI Project Improvements (the "Warranty Period"). Landlord shall, at its sole cost and expense, promptly correct or cause to be corrected (i) any defect, latent or patent, in the Non-TI Project Improvements, including, without limitation, any defects arising from Landlord's failure to complete the Non-TI Project Improvements in substantial accordance with the approved Shell, Core and Site Construction Documents (as the same may be modified by Landlord Modifications or Tenant-Requested Modifications approved hereunder), or (ii) any material deviation from the approved Shell, Core and Site Construction Documents (each, a "Non-TI Project Defect" and, collectively, the "Non-TI Project Defects"), provided that Tenant notifies Landlord of any Non-TI Project Defect within the Warranty Period. Landlord's Warranty shall be in addition to the warranties provided by contractors and suppliers as set forth in the Shell, Core and Site Construction Documents, but Landlord's Warranty shall be the sole and exclusive warranty provided by Landlord with respect to the Non-TI Project

Improvements (subject to Landlord's commitments to cause the Building to comply with Legal Requirements to the extent set forth in Section 7 of the Lease, and to maintain the Building pursuant to Section 13 of the Lease); provided, however, Landlord agrees that, for warranty claims made by Tenant during the applicable warranty period Landlord will enforce its warranties against any contractor or subcontractor performing any portion of the Non-TI Project Improvements. Nothing in this Section 5.2 shall be construed as limiting or restricting in any way Landlord's right to seek reimbursement from: (x) professionals and contractors who are parties to the relevant contracts; and/or (y) insurance companies for costs incurred by Landlord to correct any Non-TI Project Defects. Landlord shall obtain and maintain builder's risk/course of construction insurance coverage during Landlord's construction of the Non-TI Project Improvements in commercially reasonable amounts and with customary coverages commensurate with the size and scope of the construction project contemplated by this Work Letter issued by financially viable and licensed insurers, and shall provide a certificate evidencing the same to Tenant upon request therefor. Tenant shall obtain and maintain builder's risk/course of construction insurance coverage during Tenant's construction of the Tenant Improvements in commercially reasonable amounts and with customary coverages commensurate with the size and scope of the construction project contemplated by this Work Letter issued by financially viable and licensed insurers, as approved by Landlord, and shall provide a certificate evidencing the same to Landlord upon request therefor prior to the commencement of any work in the Premises. Landlord's Warranty shall in no manner limit or modify any additional warranties provided by manufacturers or contractors in connection with the Landlord's Work or Tenant Improvements.

5.3 Tenant Entry Into Building.

5.3.1 Tenant Review of Project Construction. Throughout the construction of the Non-TI Project Improvements, Tenant shall have the right, at its sole cost and expense, with reasonable advance notice to Landlord, and, if specified by Landlord at Landlord's option, accompanied by a representative of Landlord, to inspect the construction of the Non-TI Project Improvements; provided that no such inspections shall interfere with or otherwise delay Landlord's construction of the Non-TI Project Improvements. Any review of the Shell, Core and Site Construction Documents by Tenant, Tenant's Authorized Representative or anyone acting on Tenant's behalf, including without limitation construction advisors or design professionals (collectively, "Tenant's Agents"), and/or any inspections of the Non-TI Project Improvement construction by Tenant, Tenant's Authorized Representative, or Tenant's Agents, shall be for Tenant's sole purpose and shall not imply Tenant's review of the same (or obligate Tenant to review the same) for quality, design, compliance with Legal Requirements or other like matters. Neither Tenant, Tenant's Authorized Representatives nor any of Tenant's Agents shall have any liability whatsoever in connection with, and shall not be responsible for any omissions or errors contained in the Shell, Core and Site Construction Documents as a result of any inspections or review thereof.

5.3.2 Entry Requirements. In connection with Tenant's entry onto the Premises and as a condition thereto, Tenant shall secure and maintain, and cause each of its contractors entering upon the Premises in connection with the Tenant's Work to maintain, at Tenant's sole cost, a commercial general liability and property damage insurance policy covering Tenant's and Tenant Agent's activities on the Premises, which shall conform

with the provisions of Section 17 of the Lease. Tenant and its contractors shall maintain workers' compensation insurance as required by law. The insurance policies to be provided by Tenant hereunder shall name Landlord and Alexandria Real Estate Equities, Inc. as additional insureds and shall conform with the requirements of the Lease and Tenant shall be required to notify Landlord not later than thirty (30) days' prior to any termination of such policies. All insurance policies of Tenant's contractors shall be on a per project basis. Tenant shall deliver to Landlord certificates of such insurance as a condition precedent to Tenant's entry onto the Premises pursuant to Section 5.3.1 above and this Section 5.3.2. The provisions of Section 17(b) of the Lease shall otherwise govern Tenant's obligations relating to the insurance described in this Section 5.3.2. Landlord shall cause the Construction Manager to reasonably cooperate with Tenant in the exercise of its entry rights under Section 5.3.1 above. Tenant and any of Tenant's Agents entering upon the Premises hereunder shall comply with all established jobsite and safety rules and practices of Landlord's contractor and Landlord until completion of the Non-TI Project Improvements and acceptance thereof by Tenant. If Landlord determines in good faith that the entry or activities of Tenant upon the Project or the Premises hereunder is materially interfering with or delaying the completion of the Non-TI Project Improvements or any inspections or issuance of final approvals by applicable governmental authorities, Landlord may upon written notice to Tenant suspend such entry and activities.

5.3.3 Landlord's Turnover Requirements. Subject to this Work Letter, Landlord assigns jointly to Tenant and Landlord, as of the expiration of the Warranty Period, any and all Warranty Rights it has against the Construction Manager and manufacturers of building components in the Non-TI Project Improvements for which Tenant is responsible to maintain and repair under the Lease, such that Tenant may independently exercise Warranty Rights as may be required in order to fulfill its obligations under the Lease and hereunder. In the event the Landlord cannot legally assign the Warranty Rights it has against the Construction Manager to Tenant, Tenant will, without prejudice to any other right, remedy or recourse, have the right to require Landlord to exercise any of its contractual rights against the Construction Manager, the whole at Tenant's sole cost and expense. For clarification, any assignment by Landlord to Tenant of the Warranty Rights pursuant to this Work Letter does not preclude Landlord from itself exercising the Warranty Rights against the debtors thereof, it being the intention of the parties that in no event shall Landlord's rights to exercise Warranty Rights be cancelled, terminated, abrogated or limited as a result of the joint assignment contained herein. In the case of an assignment of the Lease by Tenant, Tenant will have the obligation to assign its Warranty Rights pursuant to this Work Letter to such assignee subject to the terms hereof. Furthermore, the Warranty Rights are deemed re-assigned back to Landlord after the termination of the Lease save and except for all Warranty Rights necessary for Tenant to exercise any of its Warranty Rights against the Construction Manager or any applicable manufacturer in respect of any claim regarding events having occurred prior to the termination of the Lease. Landlord further covenants that it shall not permit the Construction Manager to assign, cede or transfer any of its rights or obligations under its contract with Landlord, it being confirmed, however, for greater clarity that the Construction Manager may enter into subcontract agreements with third parties as contemplated hereunder.

6 COSTS

6.1 Budget For Tenant Improvements. Before the commencement of construction of the Tenant Improvements, Tenant shall obtain a detailed breakdown, by trade, of the costs incurred or that will be incurred, in connection with the design and construction of the Tenant Improvements (the "Budget"), and deliver a copy of the Budget to Landlord for Landlord's approval, which shall not be unreasonably withheld, conditioned or delayed. The Budget shall be based upon the Approved TI Construction Documents. As the Budget is revised as a result of Changes or otherwise in accordance with this Work Letter, Tenant shall promptly submit the revised Budget to Landlord for Landlord's approval, which shall not be unreasonably, withheld, conditioned or delayed, and upon such approval the revised Budget shall be the then current Budget hereunder.

6.1.1 Charges for Construction Elevators and Oversight of Loading Docks. Tenant shall not be charged for the use of loading docks or construction or freight elevators during construction, except that (i) if Tenant's work on the Tenant Improvements commences prior to Substantial Completion of the Non-TI Project Improvements, Tenant may be charged reasonable fees without mark-up by Landlord for use of the construction elevators, which must be operated by elevator operators; and (ii) during construction of the Tenant Improvements, whether prior to or after Substantial Completion of the Non-TI Project Improvements, Tenant may be charged reasonable fees without mark-up by Landlord for personnel to oversee deliveries outside of the hours between 7:00 a.m. and 4:00 p.m.

6.2 Base TI Allowance and Additional TI Allowance. Landlord shall provide to Tenant (a) a tenant improvement allowance (the "TI Allowance") of $167.50 per rentable square foot of the Premises or $42,395,590.00 in the aggregate, to be used for TI Costs (as defined below); and (b) if elected by Tenant as provided below, an additional tenant improvement allowance (the "Additional TI Allowance") in the amount of $2.50 per rentable square foot in the Premises, or $632,770.00 in the aggregate, which shall, if elected by Tenant, result in adjustments to the Base Rent as set forth in the Lease. To elect the Additional TI Allowance, Tenant shall notify Landlord in writing prior to the Post Rent Credit Date that Tenant is electing to receive the Additional TI Allowance from Landlord. Such election shall be final and binding on Tenant, and may not thereafter be modified without Landlord's consent, which may be granted or withheld in Landlord's sole and absolute subjective discretion. If Tenant elects to receive the Additional TI Allowance in accordance with this Section, thereafter such Additional TI Allowance shall be deemed to be part of the TI Allowance under this Work Letter. The TI Allowance shall be disbursed in accordance with this Work Letter.

6.3 Notice As to Use of TI Allowance. Subject to the terms of Section 6.9 below, Tenant shall have the right to availability of all or any portion of the TI Allowance by requisitions made any time, as to the Initial Premises, through the date that is twelve (12) months after the Post Rent Credit Date.

6.4 Use of TI Allowance. The TI Allowance shall be disbursed in accordance with this Work Letter. Tenant shall have no right to the use or benefit (including any reduction to or

payment of Base Rent) of any portion of the TI Allowance not required for payment of TI Costs as defined below.

6.5 Costs Includable in TI Allowance. The TI Allowance shall be used solely for TI Costs. The term "TI Costs" shall mean: (a) the payment of architectural, engineering and consultant fees, and permits and construction costs in connection with the construction of the Tenant Improvements, including, without limitation: (i) the cost of procuring and installing Tenant's voice and data cabling; (ii) the cost of electrical power and other utilities used in connection with the construction of the Tenant Improvements; (iii) the cost of preparing the Tenant Plans; (iv) all costs set forth in the Budget, including Landlord's out-of-pocket expenses; and (v) the cost of Tenant-Requested Modifications (collectively, "TI Costs"). Notwithstanding anything to the contrary contained herein, the TI Allowance shall not be used to purchase any furniture, personal property or other non-Building system materials or equipment, including, nor shall the TI Allowance be used for the cost of demountable partitions (unless Tenant provides its written agreement that the same shall be the property of Landlord and shall remain with the Building).

6.6 Allocation of TI Costs. Landlord shall have no obligation to bear any portion of TI Costs except to the extent of the TI Allowance or caused by a Landlord Delay (as defined below). As used in this Work Letter, "Landlord's Portion" shall equal the TI Allowance. For purposes of this Work Letter, "Landlord's Proportionate Share" shall mean a fraction, the numerator of which shall be the Landlord's Portion and the denominator of which shall be the then-current Budget for the Tenant Improvements. If at any time TI Costs under the Budget exceed the TI Allowance, the difference shall be referred to herein as "Tenant's Portion." For purposes of this Work Letter, "Tenant's Proportionate Share" shall mean a fraction, the numerator of which is Tenant's Portion and the denominator of which is the then-current Budget. There shall be an adjustment of Landlord's Proportionate Share and Tenant's Proportionate Share from time to time based on changes in the anticipated TI Costs for the Tenant Improvements.

6.7 Excess TI Costs. Landlord shall have no obligation to bear any portion of the cost of any of the Tenant Improvements except to the extent of the TI Allowance. If at any time and from time-to-time, the remaining TI Costs under the then-current Budget exceed the remaining unexpended TI Allowance, the amount of the then-current TI Costs in excess of the remaining TI Allowance shall be referred to herein as "Excess TI Costs". Notwithstanding anything to the contrary set forth in this Section 6.7, Tenant shall be fully and solely liable for Excess TI Costs. With respect to any Excess TI Costs not paid by Tenant when due, Landlord shall have all of the rights and remedies set forth in the Lease for nonpayment of Rent (including, but not limited to, the right to interest at the Default Rate after the expiration of five (5) business days after notice from Landlord of the date when due and the right to assess a late charge). For purposes of any enforcement action instituted with regard to such amounts, those amounts will be deemed Rent under the Lease.

6.8 Payment for TI Costs; Requisitions. During the course of design and construction of the Tenant Improvements, until Landlord has paid the entirety of Landlord's Portion, Landlord shall pay Landlord's Proportionate Share of the TI Costs once a month against a draw request submitted by Tenant for TI Costs previously paid by Tenant, which draw

request shall include reasonably detailed documentation of the TI Costs so paid by Tenant and contain such certifications, lien waivers (including a conditional lien release for each progress payment and unconditional lien releases for the prior month's progress payments), inspection reports and other matters as is commercially customary (collectively, a "Requisition"), to the extent of Landlord's approval thereof for payment, within 30 days of receipt of such Requisition, so long as such Requisition is submitted to, and approved by, Landlord by the 5th day of the month.

6.9 Good Faith Dispute. Landlord shall have no obligation to pay Landlord's Portion with respect to any Requisition submitted after the dates set forth in Section 6.3 above; provided, however, that if Tenant certifies to Landlord that Tenant is engaged in a good faith dispute with any contractor, such dates shall be extended while such dispute is ongoing, but in no event longer than one hundred eighty (180) days, so long as Tenant is diligently prosecuting the resolution of such dispute and complying with the terms of Section 15 of the Lease.

6.10 Documentation upon Completion of Tenant Improvements. Upon completion of the Tenant Improvements (and prior to any final disbursement of Landlord's Portion for the Tenant Improvements), Tenant shall deliver to Landlord with Tenant's Requisition: (i) sworn statements setting forth the names of all contractors and first tier subcontractors who did the work and final, unconditional lien waivers from all such contractors and first tier subcontractors; (ii) as-built plans (two (2) copies in print format and one (1) copy in Revit or compatible format) for such Tenant Improvements; (iii) a certification of substantial completion in Form AIA G704, (iv) a Certificate of Occupancy for the Premises (or temporary Certificate of Occupancy if for a portion of the Premises); and (v) copies of all operation and maintenance manuals and warranties affecting the Premises.

7 MISCELLANEOUS

7.1 Number; Headings

Where applicable in this Work Letter, the singular includes the plural and the masculine or neuter includes the masculine, feminine and neuter. The section headings of this Work Letter are not a part of this Work Letter and shall have no effect upon the construction or interpretation of any part hereof.

7.2 Time of Essence

Time is of the essence with respect to the performance of every provision of this Work Letter in which time of performance is a factor.

7.3 Withholding of Consent

Whenever consent or approval of either party is required, that party shall not unreasonably withhold condition or delay such consent or approval, except as may be expressly set forth to the contrary.

7.4 Invalidity

Any provision of this Work Letter that shall prove to be invalid, void or illegal shall in no way affect, impair or invalidate any other provision hereof, and all other provisions of this Work Letter shall remain in full force and effect and shall be interpreted as if the invalid, void or illegal provision did not exist.

7.5 Interpretation

The language in all parts of this Work Letter shall be in all cases construed as a whole according to its fair meaning and not strictly for or against either Landlord or Tenant.

7.6 Successors

Each of the covenants, conditions and agreements herein contained shall inure to the benefit of and shall apply to and be binding upon the parties hereto and their respective heirs; legatees; devisees; executors; administrators; and permitted successors, assigns, sublessees. Nothing in this Section 7.6 shall in any way alter the provisions of the Lease regarding assignment or subletting.

7.7 Governing Law

This Work Letter shall be governed by, construed and enforced in accordance with the laws of the Commonwealth of Massachusetts, without regard to such state's conflict of law principles.

7.8 Amendments; Waiver

No provision of this Work Letter may be modified, amended or supplemented except by an agreement in writing signed by Landlord and Tenant. The waiver by either party of any breach by the other party of any term, covenant or condition herein contained shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant or condition herein contained.

7.9 Dispute Process

Any dispute between Landlord and Tenant with respect to any matter arising under this Work Letter shall be submitted first to the Landlord representative and Tenant representative named below for resolution. The initial representatives of the parties shall be as follows, unless a party gives written notice to the other party that it is replacing its representative for purposes of this Section 7.9 (which notice may be given by Landlord by email to the Tenant Email Notice Parties or by Tenant by email to the Landlord Email Notice Parties):

Landlord Representative: Tom Andrews

Tenant Representative: Stacy Gilroy

The designated representatives of Landlord and Tenant shall meet one or more times to attempt to resolve such dispute within the 5-business day period following the date that the dispute is

submitted to them. If, after such meeting(s), the parties have been unable to resolve the dispute, either party may thereafter seek any available legal remedy, at law or in equity.

7.10 Waiver of Jury Trial

To the extent permitted by Legal Requirements, the parties waive trial by jury in any action, proceeding or counterclaim brought by the other party hereto related to matters arising out of or in any way connected with this Work Letter.

7.11 Business Days; Calendar Days.

Any reference to "business days" in this Work Letter shall have the meaning set forth in the Lease for the defined term "Business Days."

7.12 SAFETY.

THE PARTIES ACKNOWLEDGE THAT SAFETY IS A PARAMOUNT OBJECTIVE DURING THE CONSTRUCTION PERIOD. THE PARTIES SHALL WORK TOGETHER IN GOOD FAITH TOWARD MAXIMIZING SAFETY STANDARDS, INCLUDING, BUT NOT LIMITED TO ANY APPLICABLE UNION, TRADE ASSOCIATION, GOVERNMENTAL, OR OTHER SIMILAR STANDARDS AND APPLICABLE TENANT SAFETY REQUIREMENTS, DURING THE PERFORMANCE OF CONSTRUCTION OF THE PROJECT IMPROVEMENTS.

LIST OF SCHEDULES

1.	Schedule 2	Landlord/Tenant Responsibility Matrix
2.	Schedule 2.2.3	Shell, Core and Site Construction Documents
3.	Schedule 3	BIM Platform Description
4.	Schedule 3.6	LEED Standards

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT WERE OMITTED AND REPLACED WITH "[***]". A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECRETARY OF THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO AN APPLICATION REQUESTING CONFIDENTIAL TREATMENT PURSUANT TO RULE 24B-2 PROMULGATED UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

Work Letter (Tenant Build)

Schedule 2

Landlord/Tenant Responsibility Matrix

See attached

50 + 60 BINNEY STREET LANDLORD/TENANT RESPONSIBILITY MATRIX	**Landlord**	**Tenant**
GENERAL		
Building Core & Shell shall be certified by the USGBC at not less than Silver	X	
Landlord to provide below-grade parking with 0.9 spaces per 1,000 GFA	X	
Changes to Core & Shell scope to meet FM Global requirements		X
SITEWORK		
Perimeter sidewalks, street curbs, miscellaneous site furnishings and landscaping	X	
Telephone service to main demarcation room from local exchange carrier	X	
Domestic sanitary sewer connection to street	X	
Lab waste sewer connection	X	
Roof storm drainage	X	
NSTAR primary and secondary electrical service	X	
NSTAR gas service	X	
Domestic water service to Building	X	
Fire protection water service to Building	X	
LANDSCAPING		
Complete site improvements package, including design and installation	X	
Landscape plans to include location, species, and sizes of trees, shrubs, groundcovers, flowering plants, ornamental flowering trees and coniferous evergreen trees. All plantings shall be of specimen quality.	X	
Hardscape plans shall include walkways, driveways, curbing, exterior lighting, and non-Tenant signage. Design and site improvements materials shall be of corporate headquarters quality.	X	

STRUCTURE		
Reinforced concrete slabs with live load capacity of 100 psf (typical areas)	X	
Reinforced concrete slabs with 150 psf loading capacity in mechanical spaces	X	
Reinforced concrete slabs with 160 psf loading capacity adjacent to cores on levels 2 through 10 (interior bays between column lines B-C and D-E at column lines 1.5 through 6)	X	
Concrete containment curbs at Level M1 Mechanical penthouse walls and shafts	X	
Containment curbs in Tenant Premises to support Tenant program		X
Structural enhancements for specific Tenant load requirements		X
Structural reinforcing to meet vibration criterion of 8,000 micro inches per second	X	
Upgrade structural reinforcing to meet vibration criterion required by Tenant		X
Typical Floor to floor height of:	X	
15'-8" at Level 1 - 60 Binney (ground floor)		
14'-6" at Levels 2 through 6		
12'-8" at Levels 7 through 9		
13'-2" at Level 10		
22'-0 at M1 Mechanical Floor (Level 11)		
18'-0 at 60 Binney Mechanical Floor (Level 11)		
Column bay spacing: 32'-0" typical	X	
Structural framing dunnage above roof for Base Building equipment	X	
Structural framing dunnage above roof for Tenant equipment subject to Landlord review and approval		X
Steel stub-ups through roof system for future Tenant-provided structural framing dunnage above roof for Tenant equipment	X	
Framed openings for Base Building utility risers	X	
Framed openings for Tenant utility risers in addition to Base Building within pre-allocated Base Building areas subject to Landlord review and approval	X	
Miscellaneous metals and/or concrete pads for Base Building equipment	X	

Miscellaneous metals items and/or concrete pads for Tenant equipment		X
ROOFING		
Single-ply TPO roofing system with protection board, rigid insulation, AVB, and 20 year warranty	X	
Roofing penetrations for Base Building equipment/systems	X	
Roofing penetrations for Tenant equipment/systems, installed by Base Building roofing subcontractor		X
Walkway pads to Base Building equipment	X	
Walkway pads to Tenant equipment		X
Roofing alterations due to Tenant-requested changes within Building penthouse, installed by Base Building roofing subcontractor		X
EXTERIOR		
Building exterior consisting of curtain wall, fiber reinforced cement panels, precast concrete panels, masonry panels, metal panel rain screen, and windows	X	
Base Building entrances	X	
Building mounted signage and/or ground mounted exterior signage for Tenant identification in accordance with City of Cambridge rules and regulations subject to Landlord review and approval		X
Loading dock overhead door	X	
Overhead door at garage entrance equipped with loop detector and AVI reader	X	
Penthouse enclosure for Base Building rooftop equipment	X	
Penthouse enclosure for Tenant rooftop equipment (within existing penthouse)	X	
COMMON AREAS		
Accessible main entrance. Entrance vestibules will include accessible full glass narrow stile aluminum framed entrance doors with integrated security hardware, and recessed walk-off grid floor.	X	
Egress corridors on multi-tenant floors	X	

First floor finished lobby (consistent with a Class A Cambridge building including security desk)	X	
Core area toilet rooms. Floors and base shall be thin set ceramic tile. Full height ceramic tile shall be provided on wet walls. All other wall surfaces shall be painted drywall. Lavatory counters shall be solid surface with undermount vitreous china sinks, and continuous mirror above lavatory counters to the ceiling height. Metal toilet enclosures shall be floor mounted, steel panel construction with a stainless steel finish. Toilet room accessories shall be similar or equal to those manufactured by Bobrick Company, all in accordance with handicapped accessibility regulations.	X	
Bicycle storage and shower rooms on Level 1 sufficient to obtain LEED Sustainable Sites Credit 3.2: Alternative Transportation	X	
Shower rooms shall utilize finishes similar to core area toilet rooms	X	
Walls in toilet rooms, stairways, and Base Building utility rooms shall have a final paint finish	X	
Painted metal railings in all stairways	X	
Interior signage for all Base Building rooms (as required by Code)	X	
Janitor's closets in core areas	X	
Electrical closets in core areas. Electrical closets can be used for Tenant-provided electrical equipment, subject to coordination with Base Building equipment, and conformance to all Code requirements.	X	
IDF connected to demarcation room (pathway only)	X	
Demarcation room	X	
Loading dock area with 48" high raised dock platform and transition ramps	X	
Doors, frames, and hardware at common areas	X	
Parking control equipment in garage	X	
ELEVATORS		
Six (6) passenger elevators at 50 Binney with 3,500 lb. capacity, 350 FPM. Each serves main lobby Level 1 through Level 10.	X	
One (1) service elevator at 50 Binney with 5,000 lb. capacity, 350 FPM, 4'-0" wide door opening. Serves all below grade parking garage levels, main lobby Level 1 through Level 10, Mechanical Floor Level 11	X	

Two (2) passenger elevators at 50 Binney with 3,500 lb. capacity, 350 FPM. Each serves main lobby, Level 1, and all below grade parking garage levels.	X	
Six (6) passenger elevators at 60 Binney with 3,500 lb. capacity, 350 FPM. Each serves main lobby Level 1 through Level 10	X	
One (1) service elevator at 60 Binney with 5,000 lb. capacity, 350 FPM, 4'-0" wide door opening. Serves all below grade parking garage levels, main lobby Level 1 through Level 10, Mechanical Floor Level 11 and Roof Level 12	X	
Two (2) passenger elevators at 60 Binney with 3,500 lb. capacity, 350 FPM. Each serves main lobby Level 1 and all below grade parking garage levels	X	
WINDOW TREATMENT		
Furnish and install Building Standard window treatment, including associated supports and blocking, in Tenant areas. Building Standard is horizontal mini-blinds, 1" wide aluminum louver slats, and two-color finish. Refer to Specification Section 122110, Horizontal Louver Blinds, for full description of requirements and recommended manufacturers.		X
Solid surface window sills as applicable in Tenant areas		X
TENANT AREAS		
Drywall and finishes at inside face of exterior walls		X
Finishes at inside face at Tenant side of core partitions		X
Additional toilet rooms within Tenant Premises		X
Tenant Premises HVAC and Plumbing Rooms		X
Electrical closets within Tenant Premises		X
Tel/data rooms for Interconnection with Tenant tel/data		X
Tenant kitchen areas		X
Modifications to core areas to accommodate Tenant requirements		X
Moisture mitigation measures at slabs in Tenant premises		X
Partitions, ceilings, flooring, painting, finishes, doors, frames, hardware, millwork, casework, and buildout		X

Fixed or movable casework		X
Laboratory equipment including, but not limited to, biosafety cabinets, autoclaves, glasswashers,bioreactors		X
Chemical fume hoods, bench fume hood, lab casework		X
Shaft enclosures for Base Building systems' risers	X	
Shaft enclosures for Tenant risers within allocated space in the main vertical Base Building shafts, installed in accordance with Base Building schedule	X	
Shaft enclosures for Tenant risers outside of the allocated space in the main vertical Base Building shafts		X
All interior signage for Tenant Premises		X
Sound attenuation upgrades (interior and / or exterior) in order to comply with tenant's acoustical criteria and design of tenant areas		X
Tenant Storage space on garage level slabs with chain-link fence enclosures and padlock ready-gates	X	
Upgrades to Garage level Tenant Storage (solid partition enclosures; wall, ceiling and floor finishes; doors, frames and hardware)		X
FIRE PROTECTION		
Fire service entrance including fire department connection, alarm valve, and back flow protection	X	
Base Building area distribution piping and up-turned sprinkler heads	X	
Stair distribution piping and sprinkler heads	X	
Primary distribution and sprinkler heads adequate to support ordinary hazard (with upturned heads)	X	
All run outs, drop heads, and related equipment within Tenant Premises		X
Modification of sprinkler piping and head locations to suit Tenant layout and hazard index		X
Specialized extinguishing systems		X
Preaction dry-pipe systems (if required) within Tenant Premises		X
Fire extinguisher cabinets within Base Building areas	X	

Fire extinguisher cabinets within Tenant Premises		X
Standpipes, distribution and hose connections within egress stairs, garage and lobby	X	
Additional hose connections within Tenant Premises, including distribution piping		X
PLUMBING		
Domestic water distribution within Tenant Premises including reduced pressure backflow preventer		X
Domestic water service with backflow prevention and Base Building risers	X	
Base Building restroom plumbing fixtures compliant with accessibility requirements	X	
Tenant restroom plumbing fixtures compliant with accessibility requirements (in addition to those provided by the Base Building)		X
Wall hydrants within Base Building areas (where required by Code)	X	
Tenant metering and sub-metering at Tenant connection		X
Storm drainage system	X	
Sanitary waste and vent service for Base Building areas	X	
Sanitary waste and vent service for Tenant Premises		X
Hot water generation for Base Building restrooms	X	
NATURAL GAS		
Natural gas service to Building	X	
Natural gas service to Base Building boilers	X	
Natural gas service, pressure regulator and meter for Tenant equipment		X
Natural gas piping from Tenant meter to Tenant Premises or Tenant equipment area		X
Natural gas pipe distribution within Tenant Premises		X
Natural gas pressure regulator vent pipe riser from valve location through roof	X	

HEATING, VENTILATION, AIR CONDITIONING		
Induced draft cooling towers, supporting condenser water pumps and piping	X	
Garage exhaust fans with CO detection	X	
Stair and elevator pressurization systems for stairs and elevators within Base Building areas	X	
Elevator pressurization systems within Tenant Premises and installed by Tenant		X
NSTAR vault ventilation system for Base Building vault	X	
Garage ramp snow melt system	X	
Central gas fired boiler plant	X	
Hot water pipe risers	X	
Hot water pipe distribution within Tenant Premises		X
Reheat coils within Tenant Premises		X
Reheat coils within Base Building areas	X	
Building Management System (BMS) for Base Building	X	
BMS (compatible with Landlord's system) within Tenant Premises monitoring Tenant infrastructure		X
Provide a minimum of forty (40) hours of BMS training (for both the Core & Shell and the Tenant Premises) to Tenant s facility management prior to occupancy of the Premises by Tenant.	X	
Vertical supply air duct distribution	X	
Supply air duct distribution, including ring duct, VAV terminals, equipment connections, insulation, air terminals, dampers, hangers, etc. for Tenant Premises		X
Supply air duct distribution, VAV terminals, equipment connections, insulation, air terminals, dampers, hangers, etc. within Base Building areas	X	
Vertical exhaust air duct risers	X	
Restroom exhaust for Base Building area restrooms	X	

Restroom exhaust for new restrooms built within Tenant Premises		X
Electric room ventilation system for Base Building electrical closets	X	
Electric room ventilation system for electrical closets within Tenant Premises		X
Sound attenuation for Base Building infrastructure to comply with Cambridge Noise Ordinance	X	
Sound attenuation for Tenant equipment to comply with Cambridge Noise Ordinance		X
Additional/ dedicated cooling equipment for Tenant requirements		X
ELECTRICAL		
Electrical utility service to switchgear in Level P1 main electrical room	X	
Life Safety generator	X	
Sound attenuation for Life Safety generator to comply with Cambridge Noise Ordinance	X	
Sound attenuation for Tenant standby generator to comply with Cambridge Noise Ordinance		X
480/277V bus riser in electrical closets for Tenant connection	X	
Bus plug, meter socket, meter, and disconnect for bus tie in		X
Lighting and power distribution for Base Building areas	X	
Lighting and power distribution for Tenant Premises		X
Life Safety emergency lighting/signage including bus plugs, panels and circuit breakers for Base Building area	X	
Life Safety emergency lighting/signage for Tenant Premises (maximum .25 watts per square foot of useable space)		X
Tenant panels, transformers, etc. in addition to Base Building house panels for Base Building area		X
FIRE ALARM		
Base Building fire alarm system with devices within Base Building areas	X	

Fire alarm sub panels and devices for Tenant Premises with integration into Base Building system		X
Alteration to fire alarm system to facilitate Tenant program		X
TELEPHONE/DATA		
Underground local exchange carrier service to primary demarcation room in basement.	X	
Service from primary demarcation room to secondary demarcation room	X	
Intermediate distribution frame rooms	X	
Tenant tel/data rooms		X
Pathways from demarcation room directly into Tenant tel/data rooms	X	
Tel/Data cabling from demarcation room to intermediate distribution frame rooms		X
Tel/Data cabling from demarcation room and/ or intermediate distribution frame rooms to Tenant tel/data room		X
Fiber optic service for Tenant use		X
Carriers with fiber optic capability serving the property:		
- Verizon		
- Comcast		
- Lightower, through which the below carriers are available		
○ Last Mile Solutions		
○ RCN		
○ Zayo		
○ Genesis Fiber		
○ Century Link		
Tel/data infrastructure including, but not limited to, servers, computers, phone systems, switches, routers, MUX panels, equipment racks, ladder racks, etc.		X
Provisioning of circuits and service from service providers		X
Audio visual systems and support		X
Station cabling from Tenant tel/data room to all Tenant locations, within the suite and exterior to the suite, if needed		X

SECURITY		
Card access at Building entries	X	
Card access into or within Tenant Premises on separate Tenant installed and managed system		X
Video camera coverage of Tenant Premises on separate Tenant installed and managed system		X
60 BINNEY ONLY - PLUMBING		
Non-potable water risers for lab use including water booster system and reduced pressure backflow preventer	X	
Non-potable water distribution within Tenant Premises		X
Two stage active pH neutralization system		X
Lab waste and vent pipe risers		X
Lab waste piping in the level 1 ceiling from the bottom of the Tenant Plumbing Shaft (level 2 slab) to level P1.	X	
Lab waste and vent pipe distribution serving Tenant Premises, including connections to PH Neutralization System and sanitary waste line on level P1.		X
Non-potable hot water generation for Tenant use		X
Central lab air compressor		X
Compressed air piping risers		X
Compressed air pipe distribution within Tenant Premises for specific points of use		X
Central lab vacuum system		X
Lab vacuum pipe risers		X
Lab vacuum pipe distribution within Tenant Premises for specific points of use		X
Tepid water generator for emergency fixtures	X	
Tepid water pipe risers	X	

Tepid water pipe distribution and emergency fixtures within Tenant Premises		X
RO/DI water generator		X
RO/DI water pipe risers		X
DI water pipe distribution within Tenant Premises for specific points of use including validation and final filters		X
Manifolds, piping, and other requirements including cylinders, not specifically mentioned above		X
Storm water reclaim system to supply irrigation and toilet flushing risers	X	
60 BINNEY ONLY - NATURAL GAS		
Natural gas service to Base Building standby generator or cogeneration plant	X	
60 BINNEY ONLY - HEATING, VENTILATION, AIR CONDITIONING		
Central water cooled chilled water plant (2,400 tons capacity)	X	
Hot Water Boilers Capacity = 40,500 MBH	X	
Cooling Tower Capacity = 2,900 tons	X	
Chilled water pipe risers for Tenant use (50 tons per floor)	X	
Chilled water pipe distribution within Tenant Premises		X
Condenser water pipe risers for Tenant use (50 tons per floor)	X	
Condenser water pipe distribution within Tenant Premises		X
Lab once-through supply air handling units with 30% prefilters, 85% final filters, chilled water coils, and hot water coils. Units are sized for approximately 1.75 cfm per usable square foot.	X	
Roof mounted laboratory exhaust fans including filters, fans and energy recovery system. Units are sized for approximately 1.75 cfm per usable square foot.	X	
Exhaust air duct distribution, exhaust air valves, equipment connections, insulation, air terminals, dampers, hangers, etc. within Tenant Premises		X
Exhaust air duct distribution, exhaust air valves, equipment connections, insulation, air terminals, dampers, hangers, etc. within Base Building areas	X	

60 BINNEY ONLY - ELECTRICAL		
Allocation of bus power for Tenant use at 11.5 w/USF	X	
Standby power at 4 w/USF to the Tenant floor (via generator or cogeneration unit)	X	
Standby natural gas generator for Tenant, when more than 4 w/USF standby power is required by Tenant		X
Standby power distribution within Tenant Premises		X
Sound attenuation for generator to comply with Cambridge Noise Ordinance (natural gas)	X	
Sound attenuation upgrades to comply with Cambridge Noise Ordinance for increased size of Base Building generator or cogeneration unit to accommodate Tenant standby power needs greater than 4 w/USF		X
Automatic transfer switch for Tenant standby load - maximum Tenant use is 4w/USF	X	
Automatic transfer switches for Tenant load to accommodate Tenant-requested standby power needs greater than 4 w/USF		X
Three cooling towers and two cogen cooling pumps wired to standby power. One cooling tower and one cogen cooling pump operational during standby power mode; two cooling towers and one cogen cooling pump for redundancy to cool the cogen unit in standby power mode should the lead tower and pump fail. Cogen cooling pumps circulate water between the cogen unit and the cooling tower only.	X	
Tenant use of one of the two cooling towers (leaving one redundant tower) not needed to cool the cogen unit in standby mode. Redesign and construction of the wiring of at least one condenser water pump (CWP-W1 through CWP-W3) to standby power to provide flow through the tower and the building, redesign and construction of the controls sequence to allow a second cooling tower and a condenser water pump to operate in standby power mode, redesign and construction of the piping loop to allow simultaneous operation of a cooling tower to cool the cogen and another to cool tenant systems on the floors. Acceptance of a reduction in standby power watt density on the tenant floors to offset capacity needed to operate an additional tower and condenser water pump or increase the standby generation capacity to accommodate the tower and pump operatinq for tenant cooling needs.		X

Work Letter (Tenant Build)

Schedule 2.2.3

Shell, Core and Site Construction Documents

[***]

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Work Letter (Tenant Build)

Schedule 3

BIM Platform Description

See attached

Schedule 3
Description of BIM Platform

BIM Platform

The 50+60 Binney Street Building Information Models (BIM) use various software tools and processes for model development and management, arranged in a federated structure that is flexible and ensures information sharing between software tools. Requirements for TI BIM development described in this document serve as an overview of the model standards for the project. The TI design team will receive detailed descriptions of parameters, procedures, and technical information related to the TI BIM. The base building BIM will link to TI BIMs, creating a comprehensive record BIM.

BIM Federated Structure

Models organized by scope and discipline (Fig. 1)

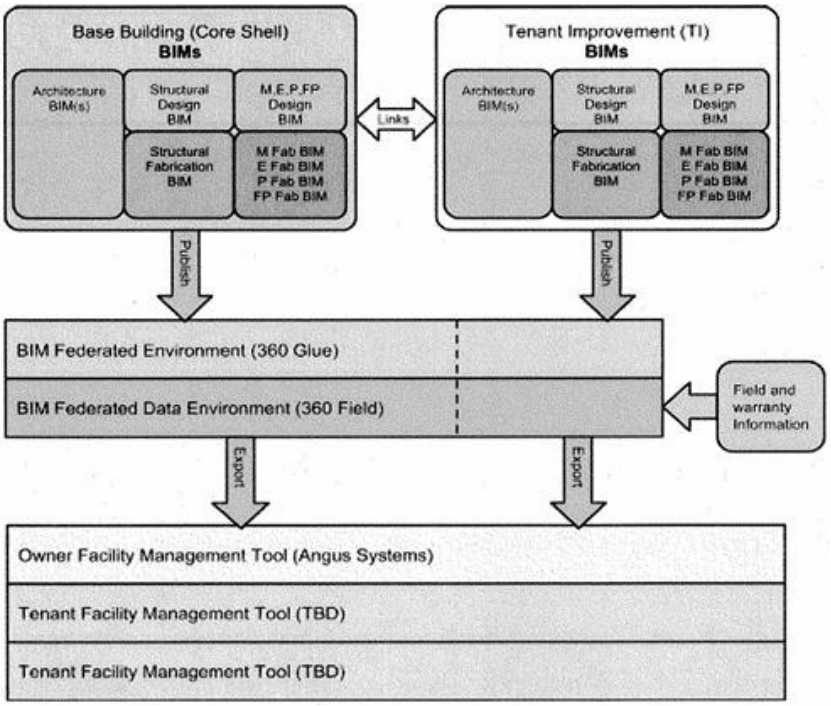

Fig 1. Federated Model- General Structure

Schedule 3
Description of BIM Platform

BIM Software Tools

BIM Design Authoring Tools

Architecture and Interiors:	Autodesk Revit 2015
Structure Design:	Autodesk Revit Structure 2015
Mechanical and Electrical:	Autodesk Revit MEP 2015
Plumbing and Fire Protection:	Autodesk Revit MEP 2015
Site Civil Design:	Autodesk Civil 3D or equivalent 3D civil tool

BIM Execution and Fabrication Tools

Mechanical, Electrical, Plumbing:	Autodesk Fabricate
Fire Protection:	AutoSprink
Structure Steel Fabrication:	SDS/2 and Tekla
Structure Concrete:	Tekla and Revit

BIM Management Tools

Autodesk BIM 360 Field and	Autodesk BIM 360 Glue

Facilities Management Tools

Angus Systems (Others TBD)

BIM Interoperability Requirements

All TI BIM data shall be made available in native format (BIM tool format) as well as IFC2x3 or IFC4 (BuildingSMART, Industry Foundation Classes) format to ensure compatibility with base models.

BIM FM System Integration

Standard BIM parameters are required for equipment, spaces, and rooms. Reference BIM geometry and data indicated in LOD (Level of Development) per the BIMForum LOD Specification 2013.

Model Curation

Landlord shall manage and maintain a federated BIM environment for the entire building. The Landlord's model curation manager will meet with Tenant for clarification of BIM expectations and to provide a comprehensive list of model standards and elements, with requirements for Tenant Improvement models in their entirety, including digital preservation procedures.

Schedule 3
Description of BIM Platform

Tenant shall provide TI BIM updates, delivered to validate adherence to the BIM requirements and for inclusion in the BIM federated environment. TI BIM updates are required at TI Design Lease Milestones defined in the Project Milestone Schedule; additional updates to reflect "as-built" conditions and record information shall be submitted at TI Construction Milestones.

The TI BIM will use the Shared Coordinates from the base building model to ensure alignment with the federated BIM and proper placement of TI elements within the base building.

BIM submissions shall include all linked or externally referenced models, CAD data, and any other associated information. Tenant shall provide any proprietary BIM software necessary to access the TI model in its entirety, with full permission rights, including separate licenses if required.

Model File Naming

TI BIM files should adhere to the naming conventions of the Base Building as follows.

Design / Assist	abbr.	File type	File Name
Design Architect	SGA	Revit 2015	5060_SGA_ARCH.rvt
Structural Eng	MCS	Revit 2015	5060_MCS_STRC. rvt
MEP Eng	WSP	Revit 2015	5060_WSP_MEPF.rvt
Trade Electrical	XXX	AutoCAD 2014	5060_ELEC_XXX_AA_LLL_MM.DD.YY.dwg 5060_ELEC_XXX_AA_LLL.dwg (optional)

Work Letter (Tenant Build)

Schedule 3.6

LEED Requirements

EAc4: Enhanced Refrigerant Management

The base building heating, ventilating, air conditioning and refrigeration systems have been selected to reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change. All tenant provided HVAC&R equipment must also comply with the following formula, which sets a maximum threshold for the combined contributions to ozone depletion and global warming potential:

$$\frac{\Sigma\ (\ LCGWP + LCODP \times 105\ ) \times Qunit}{Qtotal} \leq 100$$

IEQc5: Indoor Chemical and Pollutant Source Control

The base building has been designed to minimize building occupant exposure to potentially hazardous particulates and chemical pollutants. All tenant work affecting the entry of pollutants into the building and potential cross contamination of regularly occupied areas must be mitigated through the following strategies, as applicable to the tenant improvements:

1. Employ permanent entryway systems at least 10 feet long (3 meters) in the primary direction of travel to capture dirt and particulates entering the building at regularly used exterior entrances. Acceptable entryway systems include permanently installed grates, grills and slotted systems that allow for cleaning underneath. Roll-out mats are acceptable only when maintained on a weekly basis by a contracted service organization. Projects that do not have entryway systems cannot achieve this credit.

2. Sufficiently exhaust each space where hazardous gases or chemicals may be present or used (e.g. garages, housekeeping and laundry areas and copying and printing rooms) to create negative pressure with respect to adjacent spaces when the doors to the room are closed. For each of these spaces, provide self-closing doors and deck-to-deck partitions or a hard-lid ceiling. The exhaust rate must be at least 0.50 cubic feet per minute (cfm) per square foot (0.15 cubic meters per minute per square meter), with no air recirculation. The pressure differential with the surrounding spaces must be at least 5 Pascals (Pa) (0.02 inches of water gauge) on average and 1 Pa (0.004 inches of water) at a minimum when the doors to the rooms are closed.

3. In mechanically ventilated buildings, each ventilation system that supplies outdoor air shall comply with the following:

   A. Particle filters or air cleaning devices shall be provided to clean the outdoor air at any location prior to its introduction to occupied spaces.

B. These filters or devices shall meet one of the following criteria:

- Filtration media is rated a minimum efficiency reporting value (MERV) of 13 or higher in accordance with ASHRAE Standard 52.2.
- Filtration media is Class F7 or higher, as defined by CEN Standard EN 779: 2002, Particulate air filters for general ventilation, Determination of the filtration performance.
- Filtration media has a minimum dust spot efficiency of 80% or higher and greater than 98% arrestance on a particle size of 3–10 µg.

C. Clean air filtration media shall be installed in all air systems after completion of construction and prior to occupancy.

Innovation Credit: Low-Mercury Lighting

The developer is pursuing a LEED Innovation Credit for the use of low-mercury lighting. All tenant provided interior and exterior site lighting must be designed and specified such that it does not exceed average mercury content of 80 picograms per lumen hour.

EXHIBIT D TO LEASE

ACKNOWLEDGMENT OF DELIVERY AND RENT COMMENCEMENT DATES

This **ACKNOWLEDGMENT OF DELIVERY AND RENT COMMENCEMENT DATES** is made as of this _____ day of _____, 2016, between ARE-MA REGION NO. 40, LLC, a Delaware limited liability company ("**Landlord**"), and BLUEBIRD BIO, INC., a Delaware corporation ("**Tenant**"), and is attached to and made a part of the Lease dated as of _____, 2015 (the "**Lease**"), by and between Landlord and Tenant. Any initially capitalized terms used but not defined herein shall have the meanings given them in the Lease.

Landlord and Tenant hereby acknowledge and agree, for all purposes of the Lease, that:

a) the Delivery Date was _____;

b) the Rent Commencement Date was _____;

c) the Post Rent Credit Date was _____; and

d) the Base Term of the Lease will expire at midnight on _____.

In case of a conflict between this Acknowledgment of Delivery and Rent Commencement Dates and the Lease, this Acknowledgment of Delivery and Rent Commencement Dates shall control for all purposes.

IN WITNESS WHEREOF, Landlord and Tenant have executed this ACKNOWLEDGMENT OF DELIVERY AND COMMENCEMENT DATES to be effective on the date first above written.

TENANT:

BLUEBIRD BIO, INC.,
a Delaware corporation

By: _____
Name: _____
Its: _____

LANDLORD:

ARE-MA REGION NO. 40, LLC,
a Delaware limited liability company

By: ALEXANDRIA REAL ESTATE EQUITIES, L.P., a Delaware limited partnership, managing member
By: ARE-QRS CORP., a Maryland corporation, general partner
By: _____
Name: _____
Its: _____

EXHIBIT D-1

Landlord: **ARE-MA Region No. 40, LLC**

Tenant: **XXXX**

Date: **June 30, 2015**

(Amounts in tables are in thousands)

Certain costs of development of 50/60 Binney Street, Cambridge

The following table excludes, among others, the following:

- Cost of land.
- Capitalized interest.

	Costs Incurred
Cost Type	**Cumulative as of June 30, 2015**
General Contractor - Site, Core & Shell	
Architecture and design	
Other costs	
Tenant Improvement Allowances	
Construction Accrual	
Total	**$-**

Neither Landlord nor any of its affiliates has made any representations, statements or warranties of any kind as to the accuracy or validity of the information contained in this schedule. Without limitation of the foregoing, this report and any updates of this report are expressly subject to the terms of Section XX of the Lease.

EXHIBIT E TO LEASE

Rules and Regulations

1. The sidewalk, entries, and driveways of the Project shall not be obstructed by Tenant, or any Tenant Party, or used by them for any purpose other than ingress and egress to and from the Premises.

2. Tenant shall not place any objects, including antennas, outdoor furniture, etc., in the parking areas, landscaped areas or other areas outside of its Premises, or (except as expressly provided in the Lease) on the roof of the Building.

3. Except for animals assisting the disabled, no animals shall be allowed in the offices, halls, or corridors in the Building.

4. Tenant shall not disturb the occupants of the Building or adjoining buildings by the use of any radio or musical instrument or by the making of loud or improper noises.

5. If Tenant desires telegraphic, telephonic or other electric connections in the Premises, Landlord or its agent will direct the electrician as to where and how the wires may be introduced; and, without such direction, no boring or cutting of wires will be permitted. Any such installation or connection shall be made at Tenant's expense.

6. Tenant shall not install or operate any steam or gas engine or boiler, or other mechanical apparatus in the Premises, except as specifically approved in the Lease. The use of oil, gas or inflammable liquids for heating, lighting or any other purpose is expressly prohibited. Explosives or other articles deemed extra hazardous shall not be brought into the Project.

7. Parking any type of recreational vehicles is specifically prohibited on or about the Project. Except for the overnight parking of operative vehicles, no vehicle of any type shall be stored in the parking areas at any time. In the event that a vehicle is disabled, it shall be removed within 48 hours. There shall be no "**For Sale**" or other advertising signs on or about any parked vehicle. All vehicles shall be parked in the designated parking areas in conformity with all signs and other markings. All parking will be open parking, and no reserved parking, numbering or lettering of individual spaces will be permitted except as specified by Landlord.

8. Tenant shall maintain the Premises free from rodents, insects and other pests.

9. Landlord reserves the right to exclude or expel from the Project any person who, in the judgment of Landlord, is intoxicated or under the influence of liquor or drugs or who shall in any manner do any act in violation of the Rules and Regulations of the Project.

10. Tenant shall not cause any unnecessary labor by reason of Tenant's carelessness or indifference in the preservation of good order and cleanliness. Landlord shall not be responsible to Tenant for any loss of property on the Premises, however occurring, or for

any damage done to the effects of Tenant by the janitors or any other employee or person.

11. Tenant shall give Landlord prompt notice of any defects in the water, lawn sprinkler, sewage, gas pipes, electrical lights and fixtures, heating apparatus, or any other service equipment affecting the Premises.

12. Tenant shall not permit storage outside the Premises, including without limitation, outside storage of trucks and other vehicles, or dumping of waste or refuse or permit any harmful materials to be placed in any drainage system or sanitary system in or about the Premises.

13. All moveable trash receptacles provided by the trash disposal firm for the Premises must be kept in the trash enclosure areas, if any, provided for that purpose.

14. No auction, public or private, will be permitted on the Premises or the Project.

15. No awnings shall be placed over the windows in the Premises except with the prior written consent of Landlord.

16. The Premises shall not be used for lodging, sleeping or cooking or for any immoral or illegal purposes or for any purpose other than that specified in the Lease. No gaming devices shall be operated in the Premises.

17. Tenant shall ascertain from Landlord the maximum amount of electrical current which can safely be used in the Premises, taking into account the capacity of the electrical wiring in the Project and the Premises and the needs of other tenants, and shall not use more than such safe capacity. Landlord's consent to the installation of electric equipment shall not relieve Tenant from the obligation not to use more electricity than such safe capacity.

18. Tenant assumes full responsibility for protecting the Premises from theft, robbery and pilferage.

19. Tenant shall not install or operate on the Premises any machinery or mechanical devices of a nature not directly related to Tenant's ordinary use of the Premises and shall keep all such machinery free of vibration, noise and air waves which may be transmitted beyond the Premises.

EXHIBIT F TO LEASE

TENANT'S PROPERTY

None.

EXHIBIT F-1 TO LEASE

INITIAL LIST OF IMPROVEMENTS TO BE REMOVED

None.

EXHIBIT G

FORM OF ESTOPPEL CERTIFICATE

THIS TENANT ESTOPPEL CERTIFICATE ("Certificate"), dated as of _____ __, 201__, is executed by bluebird bio, inc., a Delaware corporation ("Tenant") in favor of ARE-MA REGION NO. 40, LLC, a Delaware limited liability company, together with its nominees, designees and assigns (collectively, "Landlord").

RECITALS

A. Tenant and Landlord have entered into that certain Lease Agreement dated as of _____, 2015 (together with all amendments, modifications, and supplements, thereof, the "Lease"), for a portion of the Project.

B. Pursuant to the Lease, Tenant has agreed that upon the request of Landlord, Tenant would execute and deliver an estoppel certificate certifying the status of the Lease.

C. Landlord has requested that Tenant execute this Certificate with an understanding that Landlord and parties designated by Landlord will rely on the representations and agreements below.

NOW, THEREFORE, Tenant certifies, warrants, and represents to Landlord as follows:

1. **Lease.** Attached hereto as Exhibit 1 is a true, correct and complete copy of the Lease, including the following amendments, modifications, supplements, guarantees and restatements thereof, which together represent all of the amendments, modifications, supplements, guarantees and restatements thereof:_____. (If none, please state "None.")

2. **Premises.** Pursuant to the Lease, Tenant leases those certain premises (the "Premises") consisting of approximately _____ rentable square feet within the Project, as more particularly described in the Lease. In addition, pursuant to the terms of the Lease, Tenant has a license for the use of [_____] parking spaces in the Garage during the Term of the Lease.

3. **Full Force of Lease**. The Lease has been duly authorized, executed and delivered by Tenant, is in full force and effect has not been terminated and constitutes a legally valid instrument, binding and enforceable against Tenant in accordance with its terms, subject only to applicable limitations imposed by laws relating to bankruptcy and creditor's rights.

4. **Complete Agreement**. The Lease constitutes the complete agreement between Landlord and Tenant for the Premises and the Project, except as modified by the Lease amendments noted above (if any).

5. **Acceptance of Premises.** The Premises have been Delivered to Tenant. [NOTE: N/A if prior to Delivery Date.] Tenant has accepted possession and is currently occupying the Premises [NOTE: N/A if prior to Rent Commencement Date].

6. **Lease Term; Extension; Expansion.** The term of the Lease commenced on _____ ___, 20___ and ends on _____ ___, 20___. Tenant has options to extend and a right of first offer as set forth in the Lease.

7. **No Purchase Rights**. Tenant has no option, right of first refusal, right of first offer on sale, or other right to purchase all or any portion of the Premises or the Project.

8. **Rent.** The obligation to pay rent under the Lease commenced on _____ ___, 20___, which is the Post Rent Credit Date. The rent under the Lease is current, and Tenant is not in Default in the performance of any of its obligations under the Lease.

Tenant is currently paying base rent under the Lease in the amount of $_____ per month, and is currently paying for parking under the Lease in the amount of $_____ per month. Tenant has not received and is not, presently, entitled to any abatement, refunds, rebates, concessions or forgiveness of rent or other charges, free rent, partial rent, or credits, offsets or reductions in rent, except as follows:_____. (If none, please state "None.")

Tenant's estimated share of operating expenses, common area charges, insurance, real estate taxes and administrative and overhead expenses is ___% and is currently being paid at the rate of $_____ per month, payable to: .

To the best of Tenant's knowledge, as of the date hereof, here are no existing defenses or offsets against rent due or to become due under the terms of the Lease, and there presently is no default or other wrongful act or omission by Landlord under the Lease or otherwise in connection with Tenant's occupancy of the Premises, except as follows: _____. (If none, please state "None.")

9. **No Security Deposit.** A Security Deposit in the form of a letter of credit in the amount of $_____ is held by Landlord under the Lease.

10. **Prepaid Rent.** The amount of prepaid rent is $_____, covering the period from _____ ___, 20___ to _____ ___, 20___.

11. **Tenant Improvements**. As of the date of this Certificate, to the best of Tenant's knowledge, Landlord has performed all obligations required of Landlord pursuant to the Lease; no offsets, counterclaims, or defenses of Tenant under the Lease exist against Landlord; except as follows: _____. (If none, please state "None.")

12. **Assignments by Landlord.** Tenant has received no notice of any assignment, hypothecation or pledge of the Lease or rentals under the Lease by Landlord, except as follows: _____. (If none, please state "None".)

13. **Assignments by Tenant**. Tenant has not sublet or assigned the Leased Premises or the Lease or any portion thereof to any sublessee or assignee, except as

follows:_____. (If none, please state "None".) The address for notices to be sent to Tenant is as set forth in the Lease.

Tenant makes this Certificate with the knowledge that it will be relied upon by Landlord and its designees.

Tenant has executed this Certificate as of the date first written above by the person named below, who is duly authorized to do so.

TENANT:

BLUEBIRD BIO, INC.,
a Delaware corporation
By: _____
Name: _____
Its: _____

EXHIBIT H

FORM OF SNDA

This Lease Subordination, Non-Disturbance of Possession and Attornment Agreement (hereinafter, the "**Subordination, Non-Disturbance and Attornment Agreement**" or "**Agreement**") is made as of the _____ day of _____, 201__, among _____, a _____ having a place of business at _____ (the "**Agent**"), as agent for itself and any other lenders (collectively, the "**Lenders**") which may become mortgage lenders to ARE-MA Region No. 40, LLC, a Delaware limited liability company having an address at 385 East Colorado Boulevard, Suite 299, Pasadena, CA 91101 (hereinafter, the "**Landlord**"), and bluebird bio, inc., a Delaware corporation, having a place of business at [_____] (hereinafter, the "**Tenant**").

Introductory Provisions

A. The Agent and the Lenders are relying on this Agreement as an inducement to Lender in making and maintaining a loan (hereinafter, the "**Loan**") secured by, among other things, a certain [Title of Mortgage] dated as of _____ ___, 201__ (hereinafter, the "**Mortgage**") given by Landlord covering property located and known as 60 Binney Street, Cambridge, Massachusetts, which property is more particularly described on Exhibit A hereto (hereinafter, the "**Property**"). The Agent is also the "Assignee" under an Assignment of Leases and Rents (hereinafter, the "**Assignment**") dated as of _____ ___, 201_, from Landlord with respect to the Property.

B. Tenant is the tenant under that certain Lease Agreement (hereinafter, the "**Lease**") dated _____, 2015, made with Landlord, covering certain premises (hereinafter, the "**Premises**") at the Property as more particularly described in the Lease.

C. Agent and Lenders require, as a condition to the making and maintaining of the Loan, that the Mortgage be and remain superior to the Lease and that its rights under the Assignment be recognized.

D. Tenant requires as a condition to the Lease being subordinate to the Mortgage that its rights under the Lease be recognized.

E. Agent, Landlord, and Tenant desire to confirm their understanding with respect to the Mortgage and the Lease.

NOW, THEREFORE, in consideration of the foregoing, the mutual covenants and agreements contained herein, and other valuable consideration, the receipt and adequacy of which are hereby acknowledged, and with the understanding by Tenant that Lender shall rely hereon in making and maintaining the Loan, the Agent, the Landlord, and the Tenant agree as follows:

1. Subordination. Subject to Section 2, the Lease is subordinate and inferior to the lien of the Mortgage, as affected by any amendment, renewal, substitution, extension or replacement of the Mortgage and each advance made thereunder as though the Mortgage, and each such amendment, renewal, substitution, extension or replacement were executed and recorded, and the advance made, before the execution of the Lease.

2. Non-Disturbance. So long as Tenant is not in Default (beyond any period expressed in the Lease within which Tenant may cure such default) in the payment of rent or in the performance or observance of any of the terms, covenants or conditions of the Lease on Tenant's part to be performed or observed: (i) Tenant's occupancy of the Premises shall not be disturbed by Agent in the exercise of any of its rights under the Mortgage during the term of the Lease, or any extension or renewal thereof made in accordance with the terms of the Lease, (ii) Agent will not join Tenant as a party defendant in any action or proceeding for the purpose of terminating Tenant's interest and estate under the Lease because of any default under the Mortgage, and (iii) Agent shall recognize all of Tenant's rights under the Lease (subject to the terms of this Agreement).

3. Attornment and Certificates. In the event Agent succeeds to the interest of Landlord as Landlord under the Lease, or if the Property or the Premises are sold pursuant to the power of sale under the Mortgage, Tenant shall attorn to Agent, or a purchaser upon any such foreclosure sale, and shall recognize Agent, or such purchaser, thereafter as the Landlord under the Lease. Such attornment shall be effective and self-operative without the execution of any further instrument. Tenant agrees, however, to execute and deliver at any time and from time to time, upon the request of any holder(s) of any of the indebtedness or other obligations secured by the Mortgage, or upon request of any such purchaser: (a) any instrument or certificate, in form and substance reasonably acceptable to Tenant, which, in the reasonable judgment of such holder(s), or such purchaser, may be necessary or appropriate in any such foreclosure proceeding or otherwise to evidence such attornment, and (b) an instrument or certificate regarding the status of the Lease, consisting of statements, if true (and if not true, specifying in what respect): (i) that the Lease is in full force and effect, (ii) the date through which rentals have been paid, (iii) the duration and date of the commencement of the term of the Lease, (iv) the nature of any amendments or modifications to the Lease, (v) that, to the knowledge of Tenant, no default, or state of facts, which with the passage of time, or notice, or both, would constitute a default, exists on the part of either party to the Lease, (vi) the dates on which payments of additional rent, if any, are due under the Lease and (vii) any other matters provided to be given in estoppels by Tenant under the Lease.

4. Limitations. If: (i) Agent exercises any of its rights under the Assignment or the Mortgage, or (ii) Agent shall succeed to the interest of Landlord under the Lease in any manner, or (iii) any purchaser acquires the Property, or the Premises, upon or after any foreclosure of the Mortgage, or any deed in lieu thereof (each hereinafter referred to as a "**Succession Event**"), Agent or such purchaser, as the case may be, shall have the same remedies by entry, action or otherwise in the event of any default by Tenant (beyond any period expressed in the Lease within which Tenant may cure such default) in the payment of rent or in the performance or observance of any of the terms, covenants and conditions of the Lease on Tenant's part to be paid, performed or observed that the Landlord had or would have had if Agent or such purchaser had not succeeded to the interest of the present Landlord. From and after any such

Succession Event, Agent or such purchaser shall, except as provided herein, be bound to Tenant under all the terms, covenants and conditions of the Lease, and Tenant shall, from and after such attornment to Agent, or to such purchaser, have the same remedies against Agent, or such purchaser, for the breach of an agreement contained in the Lease that Tenant might have had under the Lease against Landlord, if Agent or such purchaser had not succeeded to the interest of Landlord; provided, however, that Agent or such purchaser shall only be bound during the period of its ownership, and that in the case of the exercise by Agent of its rights under the Mortgage, or the Assignment, or any combination thereof, or a foreclosure, or deed in lieu of foreclosure, all Tenant claims shall be satisfied only out of the interest, if any, of Agent, or such purchaser, in the Property, and Agent and such purchaser shall not, subject to the provisions of the following paragraph, be (a) liable for any act or omission or misrepresentation of any prior landlord (including the Landlord); or (b) liable for or incur any obligation with respect to the construction of the Property or any improvements of the Premises or the Property; provided that Agent shall recognize Tenant's rights under Sections 2(b) and 31(c) of the Lease or (c) subject to any offsets or defenses which Tenant might have against Landlord, except those of which notice of which was given to Agent in accordance with Section 9 hereof; or (d) bound by any rent or additional rent which Tenant might have paid for more than the then current rental period to any prior landlord including the Landlord (other than to the extent that estimated monthly payments required to be paid by Tenant pursuant to provisions of the Lease exceed the actual amount of additional rent due from Tenant); or (e) bound by any amendment or modification of the Lease, made without Agent's prior written consent, which consent shall not be unreasonably withheld and which consent shall not be required with respect to amendments ratifying the exercise by Tenant of its rights under the Lease (e.g., without limitation, extension and expansion options); (f) bound by or responsible for any security deposit or proceeds of any letter of credit not actually received by Agent; or (g) liable for or incur any obligation with respect to the payment of any amounts due and owing to the Tenant by the Landlord including, without limitation, payment of any TI Allowance (as defined in the "**Work Letter-Tenant Improvements**" in **Exhibit C** to the Lease); provided that Agent shall recognize Tenant's rights under Section 31(c) of the Lease or (h) liable for consequential damages.

Subject to Tenant's obligation to provide notice of defaults to Agent as provided in Section 7, below: (x) nothing herein shall affect or delay Tenant's rights under Sections 2(c), 18, 19 and 31 of the Lease (including, without limitation, its rights of offset in the event that Tenant exercises any self-help right pursuant to Section 31(b)); (y) any holder shall be required to recognize Tenant's offset rights under Section 31(c) in the event that Landlord fails to timely pay any portion of the TI Allowance or Additional TI Allowance under the provisions of Exhibit C to the Lease within 30 days after notice from Tenant of the date when due as set forth in said Section 31(c), and (z) no holder shall be relieved of its obligations as party-Landlord arising under the Lease from or after the date of a Succession Event that such holder first acquires title or possession to the Premises. Without limiting the foregoing, nothing herein shall relieve any holder from Landlord's obligation to perform maintenance and repairs as required under the Lease based upon the fact that the need for such maintenance or repairs first arose prior to the Succession Date. However, Agent shall in no event be responsible for any hazardous materials or environmental or safety issues, or any violations of any related laws, rules regulations or orders with respect to the Property (an "**Environmental Concern**") which first occur or first exist prior to any acceptance of title to the Property by Agent after foreclosure or deed in lieu of foreclosure, if ever. The presumptive burden of proof shall be on any party claiming that any Environmental Concern first occurred or first existed after Agent acquired title to the Property.

5. Construction Related Costs. Notwithstanding anything in the Lease to the contrary, neither the Agent nor Lenders shall be obligated to Tenant with respect to any construction-related costs (including, but not limited to, for any base building work or unfunded TI Allowance) that may be payable by Landlord under the Lease.

6. Rights Reserved. Nothing herein contained is intended, nor shall it be construed, to abridge or adversely affect any right or remedy of: (a) the Landlord under the Lease, or any subsequent Landlord, against the Tenant in the event of any default by Tenant (beyond any period expressed in the Lease within which Tenant may cure such default) in the payment of rent or in the performance or observance of any of the terms, covenants or conditions of the Lease on Tenant's part to be performed or observed; or (b) the Tenant under the Lease against the original or any prior Landlord in the event of any default by the original Landlord to pursue claims against such original or prior Landlord whether or not such claim is barred against Agent or a subsequent purchaser.

7. Notice and Right to Cure. Tenant agrees to provide Agent with a copy of each notice of default under the Lease or failure of Landlord to satisfy a condition precedent to Tenant's obligations under the Lease, at the same time as Tenant provides Landlord with such notice, and that in the event of any default or failure by the Landlord under the Lease, Tenant will take no action to terminate the Lease (a) if the default or failure is not curable by Agent (so long as the default does not interfere with Tenant's use and occupation of the Premises), or (b) if the default or failure is curable by Agent, unless the default or failure remains uncured for a period of thirty (30) days after written notice thereof shall have been given, postage prepaid, to Landlord at Landlord's address, and to Agent at the address provided in Section 8 below; provided, however, that if any such default or failure is such that it reasonably cannot be cured within such thirty (30) day period, such period shall be extended for such additional period of time as shall be reasonably necessary (including, without limitation, a reasonable period of time to obtain possession of the Property and to foreclose the Mortgage, provided, however, that in no event shall such period exceed 150 days), if Agent gives Tenant written notice within such thirty (30) day period of Agent's election to undertake the cure of the default or failure and if curative action (including, without limitation, action to obtain possession and foreclose) is instituted within a reasonable period of time and is thereafter diligently pursued; and provided, further, however, that the foregoing notice and extended cure periods shall not limit or delay, except as otherwise set forth herein,: (a) any rent abatement rights permitted to Tenant under the Lease under Sections 2(c), 18, 19 or 31, provided, however, that Tenant gives Agent a copy of any written notice and, with respect to Tenant's abatement rights pursuant to Sections 2(c), 18, 19 or 31, neither Landlord or Agent pays the full amount due to Tenant within thirty (30) days after such notice, or (c) any self-help rights permitted to Tenant under the Lease upon the condition that the provisions in the following grammatical paragraph are complied with. Agent shall have no obligation to cure any default or failure under the Lease.

Except in the event of any emergency threatening life or property, Tenant shall not exercise any self-help right under the Lease if, within ten (10) business days after Tenant notifies Agent of its intent to exercise self-help (which notice may not be given prior to the expiration of Landlord's cure period) Agent notifies Tenant that Agent intends to cure the default if Landlord does not and within twenty (20) business days after Tenant notifies Agent of its intent to exercise self-help (which notice may not be given prior to the expiration of Landlord's cure period, Agent

actually commences to cure the default and thereafter proceeds diligently to complete such cure.

8. Notices. Any notice or communication required or permitted hereunder shall be in writing, and shall be given or delivered: (i) by United States mail, registered or certified, postage fully prepaid, return receipt requested, or (ii) by recognized courier service or recognized overnight delivery service; and in any event addressed to the party for which it is intended at its address set forth below:

To Agent:

_____

_____

_____

Attention: _____

and

_____

_____

_____

Attention: _____

with copies by regular mail or such hand delivery:

_____

_____

_____

Attention: _____

_____

If to the Landlord:
385 East Colorado Boulevard, Suite 299
Pasadena, CA 91101
Attention: Corporate Secretary
Re: 60 Binney Street, Cambridge, MA

If to Tenant:

bluebird bio, inc.
[address]
Attention:

With a copy to:

or such other address as such party may have previously specified by notice given or delivered in accordance with the foregoing. Any such notice shall be deemed to have been given and received on the date delivered or tendered for delivery during normal business hours as herein provided.

9. No Oral Change. This Agreement may not be modified orally or in any manner than by an agreement in writing signed by the parties hereto or their respective successors in interest.

10. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the parties hereto, their respective heirs, personal representatives, successors and assigns, and any purchaser or purchasers at foreclosure of the Property or any portion thereof, and their respective heirs, personal representatives, successors and assigns.

11. Payment of Rent To Agent. Tenant acknowledges that it has notice that the Lease and the rent and all sums due thereunder have been assigned to Agent, on behalf of the Lenders, as part of the security for the obligations secured by the Mortgage. In the event Agent notifies Tenant of a default under the Loan and demands that Tenant pay its rent and all other sums due under the Lease to Agent, Tenant agrees that it will honor such demand and pay its rent and all other sums due under the Lease to Agent, or Agent's designated agent, until otherwise notified in writing by Agent. Landlord unconditionally authorizes and directs Tenant to make rental payments directly to Agent following receipt of such notice and further agrees that Tenant may rely upon such notice without any obligation to further inquire as to whether or not any default exists under the Mortgage or the Assignment, that Landlord shall have no right or claim against Tenant for or by reason of any payments of rent or other charges made by Tenant to Agent following receipt of such notice, and that any amounts paid by Tenant in accordance with such notice shall have the same effect under the Lease as if Tenant had made such payments directly to Landlord.

12. No Amendment of Lease. So long as the Mortgage remains undischarged of record, Tenant shall not amend or modify the Lease without Agent's prior written consent in each instance, such consent not to be unreasonably withheld, delayed or conditioned in the case of an amendment or modification of the Lease or any assignment and subletting (and which consent shall not be unreasonably withheld or delayed and which consent shall not be required with respect to any amendment, modification or termination which is the result of the exercise by Tenant of its rights under the Lease, e.g., without limitation, extension and expansion rights).

13. Captions. Captions and headings of sections are not parts of this Agreement and shall not be deemed to affect the meaning or construction of any of the provisions of this Agreement.

14. Counterparts. This Agreement may be executed in several counterparts each of which when executed and delivered is an original, but all of which together shall constitute one instrument.

15. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts.

16. Parties Bound. The provisions of this Agreement shall be binding upon and inure to the benefit of Tenant, Agent, Lender and Landlord and their respective successors and assigns; provided, however, reference to successors and assigns of Tenant shall not constitute a consent by Landlord to an assignment or sublet by Tenant, but has reference only to those instances in which such consent is not required pursuant to the Lease or for which such consent has been given.

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT WERE OMITTED AND REPLACED WITH "[***]". A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECRETARY OF THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO AN APPLICATION REQUESTING CONFIDENTIAL TREATMENT PURSUANT TO RULE 24B-2 PROMULGATED UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

[Remainder of this page intentionally left blank; signature pages follow]

CERTAIN CONFIDENTIAL PORTIONS OF THIS EXHIBIT WERE OMITTED AND REPLACED WITH "[***]". A COMPLETE VERSION OF THIS EXHIBIT HAS BEEN FILED SEPARATELY WITH THE SECRETARY OF THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO AN APPLICATION REQUESTING CONFIDENTIAL TREATMENT PURSUANT TO RULE 24B-2 PROMULGATED UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the date first above written.

AGENT:

_____

By: _____

Name: _____

Title: _____

STATE OF _____

_____ County, ss.

On this ____ day of _____, 201__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose, as _____ of _____, a _____.

_____

(official signature and seal of notary)

My commission expires

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss.

On this ____ day of _____, 201__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose, as _____ of _____, a _____.

_____

(official signature and seal of notary)

My commission expires

STATE OF _____

_____ County, ss.

On this ____ day of _____, 201__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose, as _____ of _____, a _____.

_____

(official signature and seal of notary)

My commission expires

COMMONWEALTH OF MASSACHUSETTS

_____ County, ss.

On this ____ day of _____, 201__, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose, as _____ of _____, a _____.

_____

(official signature and seal of notary)

My commission expires

Exhibit A

Legal Description

[***]

EXHIBIT I

LIST OF ENVIRONMENTAL REPORTS

[***]

Exhibit 31.1

CERTIFICATIONS

I, Nick Leschly, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of bluebird bio, 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 15(d)-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 5, 2015

By: /s/ Nick Leschly
Nick Leschly
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, James M. DeTore, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of bluebird bio, 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 15(d)-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 5, 2015

By: /s/ James M. DeTore
James M. DeTore
Chief Financial Officer and Treasurer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of bluebird bio, Inc. (the "Company") for the period ended September 30, 2015 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, that to his or her 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 5, 2015

By: /s/ Nick Leschly
Nick Leschly
President, Chief Executive Officer and Director (Principal Executive Officer and Duly Authorized Officer)

Date: November 5, 2015

By: /s/ James M. DeTore
James M. DeTore
Chief Financial Officer and Treasurer (Principal Financial Officer and Duly Authorized Officer)