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, 2021

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.)**
60 Binney Street Cambridge , Massachusetts	**02142**
(Address of Principal Executive Offices)	**(Zip Code)**

(339) 499-9300
(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	BLUE	The NASDAQ Stock Market LLC

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

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

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

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

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

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

As of November 1, 2021, there were 70,107,263 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,” “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 and drug product manufacturing capabilities, and to ensure adequate supply of our viral vectors and drug products;
- the timing or likelihood of regulatory filings and approvals for our betibeglogene autotemcel (beti-cel), elivaldogene autotemcel (eli-cel), and LentiGlobin for SCD;
- the timing or success of commercialization of beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained;
- our ability to obtain adequate pricing and reimbursement of beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained;
- 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 potential products 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 and licenses;
- developments relating to our competitors and our industry;
- the impact of the COVID-19 pandemic;
- the effects, costs, and benefits, including the tax treatment of the spinoff of 2seventy bio, Inc.; 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.

Summary of the Material and Other Risks Associated with Our Business

Below is a summary of the material risks to our business, operations and the investment in our common stock. This summary does not address all of the risks that we face. Risks and uncertainties not presently known to us or that we presently deem less significant may also impair our business operations. Additional discussion of the risks summarized in this risk factor summary, and other risks that we face, can be found below under the heading "Risk Factors" and should be carefully considered, together with other information in this Quarterly Report on Form 10-Q in its entirety before making investment decisions regarding our common stock.

- We have limited experience as a commercial company and the marketing and sale of beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, may be unsuccessful or less successful than anticipated.
- The commercial success of beti-cel, eli-cel, and LentiGlobin for SCD will depend upon the degree of market acceptance by physicians, patients, third-party payers and others in the medical community. Following marketing approval of beti-cel in the European Union, we did not reach agreement with payers on an acceptable price for reimbursement in our priority markets in Europe, and as a consequence, we are focusing on our severe genetic disease business on the U.S. market. If we fail to obtain sufficient pricing or reimbursement approval in the United States for beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, our revenues may be adversely affected and our business may suffer.
- If the market opportunities for our potential products are smaller than we believe they are, and if we are not able to successfully identify patients and achieve significant market share, our revenues may be adversely affected and our business may suffer.
- We rely on a complex supply chain for beti-cel, eli-cel, and LentiGlobin for SCD. The manufacture and delivery of our lentiviral vectors and drug products present significant challenges for us, and we may not be able to produce our lentiviral vectors and drug products at the quality, quantities, locations or timing needed to support our clinical programs or commercialization following marketing approval, if and when obtained. In addition, we may encounter challenges with engaging or coordinating with qualified treatment centers needed to support commercialization.
- We cannot predict when or if we will obtain marketing approval to commercialize our product candidates, and any marketing approvals that we receive may ultimately be for more narrow indications than we expect.
- Insertional oncogenesis is a risk of gene therapies using viral vectors that can integrate into the genome, and our clinical studies of eli-cel are currently on clinical hold due to diagnoses of myelodysplastic syndrome likely mediated by Lenti-D lentiviral vector insertion. We can make no assurances as to when the clinical hold will be lifted, if ever. These insertional oncogenesis events may require us to halt or delay further clinical development of our product candidates, such as eli-cel, or to suspend or cease commercialization following marketing approval, and the commercial potential of our product candidates may be materially and negatively impacted.
- We face intense competition and rapid technological change and the possibility that our competitors may develop therapies that are more advanced, safer or effective than ours, which may adversely affect our financial condition and our ability to successfully commercialize beti-cel, eli-cel, or LentiGlobin for SCD following marketing approval, if and when obtained. If our competitors obtain orphan drug exclusivity for products that regulatory authorities determine constitute the same drug and treat the same indications as our potential products, we may not be able to have competing products approved by the applicable regulatory authority for a significant period of time.
- We may not be successful in our efforts to identify or discover additional product candidates.
- We have incurred significant losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future.
- 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.
- Our business may be materially and adversely affected by the ongoing COVID-19 pandemic. The COVID-19 pandemic has had, and will likely continue to have, an impact on various aspects of our business and that of third parties on which we rely. The extent to which the COVID-19 pandemic impacts our business will depend in part on future developments, which are uncertain and unpredictable in nature.
- The separation of our operations and business into two independent, publicly traded companies is subject to various risks and uncertainties and may not be completed on the terms or timeline currently contemplated, if at all, and will

involve significant time, effort and expense, which could harm our business, results of operations and financial condition.

bluebird bio, Inc.

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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)

	As of September 30, 2021	As of December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 402,461	$ 317,705
Marketable securities	375,140	833,546
Prepaid expenses	30,712	37,472
Receivables and other current assets	23,246	16,116
Inventory	766	10,698
Total current assets	832,325	1,215,537
Marketable securities	193,129	122,891
Property, plant and equipment, net	45,745	162,831
Intangible assets, net	11,009	10,041
Goodwill	12,056	13,128
Operating lease right-of-use assets	174,435	184,019
Restricted cash and other non-current assets	70,945	72,805
Total assets	$ 1,339,644	$ 1,781,252
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 21,668	$ 21,602
Accrued expenses and other current liabilities	203,790	145,406
Operating lease liability, current portion	29,441	25,024
Deferred revenue, current portion	2,530	2,320
Collaboration research advancement, current portion	9,130	9,236
Total current liabilities	266,559	203,588
Deferred revenue, net of current portion	25,761	25,762
Collaboration research advancement, net of current portion	16,767	21,581
Operating lease liability, net of current portion	152,126	167,997
Other non-current liabilities	7,904	7,268
Total liabilities	469,117	426,196
Commitments and contingencies *(Note 9)*		
Stockholders' equity:		
Preferred stock, $0.01 par value, 5,000 shares authorized; 0 shares issued and outstanding at September 30, 2021 and December 31, 2020	—	—
Common stock, $0.01 par value, 125,000 shares authorized; 70,097 and 66,432 shares issued and outstanding at September 30, 2021 and December 31, 2020, respectively	701	665
Additional paid-in capital	4,440,605	4,260,443
Accumulated other comprehensive loss	(5,906)	(5,505)
Accumulated deficit	(3,564,873)	(2,900,547)
Total stockholders' equity	870,527	1,355,056
Total liabilities and stockholders' equity	$ 1,339,644	$ 1,781,252

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)

	For the three months ended September 30,		For the nine months ended September 30,	
	2021	2020	2021	2020
Revenue:				
Service revenue	$ 6,312	$ 13,352	$ 17,544	$ 108,542
Collaborative arrangement revenue	14,831	2,422	18,020	114,398
Royalty and other revenue	1,534	3,499	7,379	17,086
Total revenues	22,677	19,273	42,943	240,026
Operating expenses:				
Research and development	131,427	140,431	429,614	450,862
Selling, general and administrative	68,277	68,046	229,708	209,922
Share of collaboration loss	—	—	10,071	—
Cost of royalty and other revenue	19,704	1,318	37,286	3,897
Restructuring expense	20,175	—	24,800	—
Change in fair value of contingent consideration	48	(828)	464	(5,591)
Total operating expenses	239,631	208,967	731,943	659,090
Loss from operations	(216,954)	(189,694)	(689,000)	(419,064)
Interest income, net	319	1,964	1,468	10,258
Other income (expense), net	(294)	(6,686)	23,375	(9,582)
Loss before income taxes	(216,929)	(194,416)	(664,157)	(418,388)
Income tax benefit (expense)	113	(329)	(169)	(433)
Net loss	$ (216,816)	$ (194,745)	$ (664,326)	$ (418,821)
Net loss per share - basic and diluted:	$ (3.16)	$ (2.94)	$ (9.81)	$ (6.89)
Weighted-average number of common shares used in computing net loss per share - basic and diluted:	68,621	66,251	67,701	60,762
Other comprehensive loss:				
Other comprehensive loss, net of tax benefit (expense) of $0.0 million and $0.1 million for the three months ended September 30, 2021 and 2020, respectively, and $0.0 million for the nine months ended September 30, 2021 and 2020.	(129)	(1,823)	(401)	(2,330)
Total other comprehensive loss	(129)	(1,823)	(401)	(2,330)
Comprehensive loss	$ (216,945)	$ (196,568)	$ (664,727)	$ (421,151)

See accompanying notes to unaudited condensed consolidated financial statements.

bluebird bio, Inc.

Condensed Consolidated Statements of Stockholders' Equity
(unaudited)
(in thousands)

	Common stock		Additional paid-in capital	Accumulated other comprehensive loss	Accumulated deficit	Total stockholders' equity
	Shares	Amount				
Balances at December 31, 2020	66,432	$ 665	$ 4,260,443	$ (5,505)	$ (2,900,547)	$ 1,355,056
Vesting of restricted stock units	294	3	(3)	—	—	—
Exercise of stock options	207	2	1,217	—	—	1,219
Purchase of common stock under ESPP	67	1	1,706	—	—	1,707
Stock-based compensation	—	—	36,090	—	—	36,090
Issuance of unrestricted stock awards to settle accrued employee compensation	422	4	12,009	—	—	12,013
Other comprehensive income	—	—	—	56	—	56
Net loss	—	—	—	—	(205,808)	(205,808)
Balances at March 31, 2021	67,422	$ 675	$ 4,311,462	$ (5,449)	$ (3,106,355)	$ 1,200,333
Vesting of restricted stock units	127	1	(1)	—	—	—
Exercise of stock options	2	—	36	—	—	36
Stock-based compensation	—	—	26,222	—	—	26,222
Other comprehensive loss	—	—	—	(328)	—	(328)
Net loss	—	—	—	—	(241,702)	(241,702)
Balances at June 30, 2021	67,551	676	4,337,719	(5,777)	(3,348,057)	984,561
Vesting of restricted stock units	80	1	(1)	—	—	—
Exercise of stock options	10	—	233	—	—	233
Purchase of common stock under ESPP	53	1	874	—	—	875
Issuance of common stock for private equity placement	2,273	22	37,477	—	—	37,499
Issuance of pre-funded warrants	—	—	37,477	—	—	37,477
Issuance of unrestricted stock awards to settle accrued employee compensation	130	1	2,474	—	—	2,475
Stock-based compensation	—	—	24,352	—	—	24,352
Other comprehensive loss	—	—	—	(129)	—	(129)
Net loss	—	—	—	—	(216,816)	(216,816)
Balances at September 30, 2021	70,097	$ 701	$ 4,440,605	$ (5,906)	$ (3,564,873)	$ 870,527

bluebird bio, Inc.

Condensed Consolidated Statements of Stockholders' Equity - (continued)
(unaudited)
(in thousands)

	Common stock		Additional paid-in capital	Accumulated other comprehensive loss	Accumulated deficit	Total stockholders' equity
	Shares	Amount				
Balances at December 31, 2019	55,368	$ 554	$ 3,568,184	$ (1,893)	$ (2,281,852)	$ 1,284,993
Vesting of restricted stock units	204	2	(2)	—	—	—
Exercise of stock options	20	—	750	—	—	750
Purchase of common stock under ESPP	28	—	1,872	—	—	1,872
Stock-based compensation	—	—	36,335	—	—	36,335
Other comprehensive loss	—	—	—	(906)	—	(906)
Net loss	—	—	—	—	(202,611)	(202,611)
Balances at March 31, 2020	55,620	$ 556	$ 3,607,139	$ (2,799)	$ (2,484,463)	$ 1,120,433
Issuance of common stock upon public offering, net of issuance costs of $33,465	10,455	105	541,431	—	—	541,536
Vesting of restricted stock units	114	1	(1)	—	—	—
Exercise of stock options	7	—	347	—	—	347
Stock-based compensation	—	—	40,781	—	—	40,781
Other comprehensive income	—	—	—	399	—	399
Net loss	—	—	—	—	(21,465)	(21,465)
Balances at June 30, 2020	66,196	$ 662	$ 4,189,697	$ (2,400)	$ (2,505,928)	$ 1,682,031
Vesting of restricted stock units	62	1	(1)	—	—	—
Exercise of stock options	28	—	249	—	—	249
Purchase of common stock under ESPP	53	—	1,902	—	—	1,902
Stock-based compensation	—	—	35,407	—	—	35,407
Other comprehensive loss	—	—	—	(1,823)	—	(1,823)
Net loss	—	—	—	—	(194,745)	(194,745)
Balances at September 30, 2020	66,339	$ 663	$ 4,227,254	$ (4,223)	$ (2,700,673)	$ 1,523,021

bluebird bio, Inc.

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

	For the nine months ended September 30,	
	2021	**2020**
Cash flows from operating activities:		
Net loss	$ (664,326)	$ (418,821)
Adjustments to reconcile net loss to net cash used in operating activities:		
Change in fair value of contingent consideration	464	(5,591)
Depreciation and amortization	17,335	14,378
Stock-based compensation expense	101,829	123,640
(Gain) loss on equity securities	(28,765)	9,068
Excess inventory reserve	29,712	—
Other non-cash items	13,358	(1,538)
Changes in operating assets and liabilities:		
Prepaid expenses and other assets	3,287	(2,534)
Inventory	(19,007)	(9,382)
Operating lease right-of-use assets	22,630	16,345
Accounts payable	2,004	(15,420)
Accrued expenses and other liabilities	54,774	(13,056)
Operating lease liabilities	(24,499)	(14,603)
Deferred revenue	210	8,558
Collaboration research advancement	(4,920)	(6,202)
Net cash used in operating activities	(495,914)	(315,158)
Cash flows from investing activities:		
Purchase of property, plant and equipment	(12,944)	(21,098)
Purchases of marketable securities	(421,416)	(964,428)
Proceeds from maturities of marketable securities	802,367	722,487
Proceeds from sales of marketable securities	31,318	29,878
Proceeds from sale of Durham, North Carolina manufacturing facility	110,300	—
Purchase of intangible assets	(8,000)	—
Net cash provided by (used in) investing activities	501,625	(233,161)
Cash flows from financing activities:		
Proceeds from public offering of common stock, net of issuance costs	—	541,536
Proceeds from issuance of common stock and warrants	74,982	—
Proceeds from exercise of stock options and ESPP contributions	5,078	3,747
Net cash provided by financing activities	80,060	545,283
Increase in cash, cash equivalents and restricted cash	85,771	(3,036)
Cash, cash equivalents and restricted cash at beginning of period	373,728	381,709
Cash, cash equivalents and restricted cash at end of period	$ 459,499	$ 378,673
Reconciliation of cash, cash equivalents and restricted cash:		
Cash and cash equivalents	$ 402,461	$ 324,164
Restricted cash included in receivables and other current assets	$ 2,530	$ —
Restricted cash included in restricted cash and other non-current assets	$ 54,508	$ 54,509
Total cash, cash equivalents and restricted cash	$ 459,499	$ 378,673
Supplemental cash flow disclosures from investing and financing activities:		
Purchases of property, plant and equipment included in accounts payable and accrued expenses	$ 732	$ 1,686
Right-of-use assets obtained in exchange for operating lease liabilities	$ 22,049	$ 18,909
Reduction of right of use asset and associated lease liability due to lease reassessment	$ (9,004)	$ —
Issuance of unrestricted stock awards to settle accrued employee compensation	$ 14,488	$ —

See accompanying notes to unaudited condensed consolidated financial statements.

bluebird bio, Inc.

Notes to Condensed Consolidated Financial Statements
(unaudited)

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 is a biotechnology company committed to researching, developing and commercializing, following marketing approval, potentially transformative gene therapies for severe genetic disease. 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 selling, general and administrative support for these operations, including commercial activities in Europe as well as commercial-readiness activities in the United States.

In November 2021, the Company completed the separation of its severe genetic disease and oncology programs into two separate, independent publicly traded companies, bluebird bio, Inc. and 2seventy bio, Inc., a Delaware corporation and wholly-owned subsidiary of the Company prior to the separation. bluebird bio, Inc. intends to retain its severe genetic disease programs, with a focus on the U.S. market. The Company’s programs in severe genetic diseases include programs for transfusion-dependent β-thalassemia, or TDT, sickle cell disease, or SCD, and cerebral adrenoleukodystrophy, or CALD. The Company also expects to make focused investments in research and development efforts on optimizing our existing programs as well as on pipeline programs in severe genetic diseases. 2seventy bio, Inc. is expected to focus on the Company's former oncology programs, including the anti-BCMA CAR T programs for multiple myeloma under the Company’s collaboration arrangement with Bristol-Myers Squibb ("BMS"). Please refer to Note 10, *Collaborative arrangements and strategic partnerships*, for further discussion of the Company’s collaboration with BMS. The results for the period ended September 30, 2021 reflect the combined results of the Company and 2seventy bio prior to the effectiveness of the separation, and the forward-looking statements contained within pertain to the Company's severe genetic disease operations, unless otherwise noted.

In accordance with Accounting Standards Codification (“ASC”) 205-40, *Going Concern*, the Company evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about its ability to continue as a going concern within one year after the date that the consolidated financial statements are issued. The Company has incurred losses since inception and to date has financed its operations primarily through the sale of equity securities and, to a lesser extent, through collaboration agreements and grants from governmental agencies and charitable foundations. As of September 30, 2021, the Company had an accumulated deficit of $3.56 billion. During the nine months ended September 30, 2021, the Company incurred a loss of $664.3 million and used $495.9 million of cash in operations. The Company expects to continue to generate operating losses and negative operating cash flows for the next few years and will need additional funding to support its planned operating activities through profitability. The transition to profitability is dependent upon the successful development, approval, and commercialization of beti-cel, eli-cel, and LentiGlobin for SCD, and the achievement of a level of revenues adequate to support its cost structure.

As of September 30, 2021, the Company had cash, cash equivalents and marketable securities of $970.7 million. Upon separation, the Company funded 2seventy bio with approximately $441.5 million, which has reduced the amount of cash available to the Company as of the date of separation. The Company expects its cash, cash equivalents and marketable securities, subsequent to the amount funded to 2seventy bio, will be sufficient to fund current planned operations for at least the next twelve months from the date of issuance of these financial statements. The Company anticipates reduced 2022 spending, including projected savings through the move of the Company's headquarters to Assembly Row in Somerville, Massachusetts, and the orderly wind down of European operations. This, together with other anticipated cash inflows, which include both the potential sale of priority review vouchers that would be issued with anticipated U.S. regulatory approvals of BLAs for beti-cel and eli-cel, and the pursuit of additional cash resources through public or private equity or debt financings, are expected to further strengthen the Company's financial condition. Management's expectations with respect to its ability to fund current planned operations are based on estimates that are subject to risks and uncertainties. If actual results are different from management's estimates, the Company may need to seek additional cash resources through strategic or financing opportunities sooner than would otherwise be expected. However, there is no guarantee that any of these strategic or financing opportunities will be executed or executed on favorable terms, and some could be dilutive to existing stockholders. If the Company is unable to obtain additional cash resources on a timely basis, it may be forced to significantly curtail, delay, or discontinue one or more of its planned research or development programs or be unable to expand its operations or commercialize products following marketing approval.

2. Basis of presentation, principles of consolidation and significant accounting policies

Basis of presentation

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 Updates (“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 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, 2021 and 2020.

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 condensed consolidated financial statements should be read in conjunction with the audited consolidated financial statements as of and for the year ended December 31, 2020, 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 23, 2021.

Inventory in the prior year’s condensed consolidated financial statements has been reclassified to conform to the current presentation on the condensed consolidated balance sheets and condensed consolidated statements of cash flows. However, no subtotals in the prior year condensed consolidated financial statements were impacted as a result.

Amounts reported are computed based on thousands. As a result, certain totals may not sum due to rounding.

The accompanying condensed consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries, including 2seventy bio, which on November 4, 2021 became an independent, publicly-traded company. 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.

Significant accounting policies

The significant accounting policies used in preparation of these condensed consolidated financial statements for the three and nine months ended September 30, 2021 are consistent with those discussed in Note 2 to the consolidated financial statements included in the Company’s 2020 Annual Report on Form 10-K, except as noted immediately below and as noted within the *"Recent accounting pronouncements - Recently adopted"* section.

Collaborative arrangement revenue

The Company analyzes its collaboration arrangements to assess whether they are within the scope of ASC 808, *Collaborative Arrangements* ("ASC 808"), which includes determining whether such arrangements involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities. This assessment is performed throughout the life of the arrangement based on changes in the responsibilities of all parties in the arrangement. For collaboration arrangements within the scope of ASC 808 that contain multiple elements, the Company first determines which elements of the collaboration are deemed to be within the scope of ASC 808 and those that are more reflective of a vendor-customer relationship and therefore within the scope of ASC 606, *Revenue from Contracts with Customers* ("Topic 606" or "ASC 606"). For elements of collaboration arrangements that are accounted for pursuant to ASC 808, an appropriate recognition method is determined and applied consistently, generally by analogy to Topic 606.

In arrangements where the Company does not deem its collaborator to be its customer, payments to and from its collaborator are presented in the condensed consolidated statements of operations based on the nature of the payments, as summarized in the table and further described below.

Nature of Payment	Statement of Operations Presentation
The Company's share of profits in connection with commercialization of products	Collaborative arrangement revenue
The Company's share of losses in connection with commercialization of products	Share of collaboration loss
Net reimbursement of the Company's research and development expenses	Collaborative arrangement revenue
Net reimbursement of the collaborator's research and development expenses	Research and development expense

Where the collaborator is the principal in the product sales, the Company recognizes its share of any profits or losses, representing net product sales less cost of goods sold and shared commercial and other expenses, in the period in which such underlying sales occur and costs are incurred by the collaborator. The Company also recognizes its share of costs arising from research and development activities performed by collaborators in the period its collaborators incur such expenses.

Royalty and other revenue

During the nine months ended September 30, 2021, the Company recognized an immaterial amount of product revenue related to the sale of beti-cel (marketed as ZYNTEGLO) in the European Union and the related cost of goods sold, which is included within royalty and other revenue and cost of royalty and other revenue, respectively.

Inventory

Inventories are stated at the lower of cost or net realizable value under the first-expired, first-out (FEFO) methodology. Given human gene therapy products are a new and novel category of therapeutics and future economic benefit is not probable until regulatory approval for the product has been obtained, the Company has only considered inventory for capitalization upon regulatory approval. Manufacturing costs incurred prior to regulatory approval for pre-launch inventory that did not qualify for capitalization and clinical manufacturing costs are charged to research and development expense in the Company’s condensed consolidated statements of operations and comprehensive loss as costs are incurred. Additionally, inventory that initially qualifies for capitalization but that may ultimately be used for the production of clinical drug product is expensed as research and development expense when it has been designated for the manufacture of clinical drug product.

Inventory consists of cell banks, plasmids, lentiviral vectors, other materials and compounds sourced from third party suppliers and utilized in the manufacturing process, and drug product, which has been produced for the treatment of specific patients, that are owned by the Company.

Management periodically reviews inventories for excess or obsolescence, considering factors such as sales forecasts compared to quantities on hand and firm purchase commitments as well as remaining shelf life of on hand inventories. The Company writes-down its inventory that is obsolete or otherwise unmarketable to its estimated net realizable value in the period in which the impairment is first identified. Any such adjustments are included as a component of cost of goods sold within cost of royalty and other revenue on the Company’s condensed consolidated statements of operations.

Common Stock Warrants

The Company's common stock warrants are evaluated pursuant to ASC 480, *Distinguishing Liabilities from Equity* ("ASC 480"), and ASC 815, *Derivatives and Hedging* ("ASC 815"). Management classifies its freestanding warrants as (i) liabilities, if the warrant terms allow settlement of the warrant exercise in cash, or (ii) equity, if the warrant terms only allow settlement in shares of common stock.

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. Actual results could materially differ from those estimates. Management considers many factors in selecting appropriate financial accounting policies and controls, and in developing the estimates and assumptions that are used in the preparation of these financial statements. Management must apply significant judgment in this process. In addition, other factors may affect estimates, including: expected business and operational changes, sensitivity and volatility associated with the assumptions used in developing estimates, and whether historical trends are expected to be representative of future trends. The estimation process often may yield a range of potentially reasonable estimates of the ultimate future outcomes and management must select an amount that falls within that range of reasonable estimates. This process may result in actual results differing materially from those estimated amounts used in the

preparation of the financial statements. Estimates are used in the following areas, among others: future undiscounted cash flows and subsequent fair value estimates used to assess potential and measure any impairment of long-lived assets, including goodwill and intangible assets, and the measurement of right-of-use assets and lease liabilities, contingent consideration, stock-based compensation expense, accrued expenses, revenue recognition, income taxes, inventory capitalization, excess inventory analyses, and the assessment of the Company's ability to fund its operations for at least the next twelve months from the date of issuance of these financial statements.

Recent accounting pronouncements

Recently adopted

ASU No. 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes* (“ASU 2019-12”), which is intended to simplify the accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in Topic 740 and also clarifies and amends existing guidance to improve consistent application. The new standard was effective beginning January 1, 2021. The adoption of ASU 2019-12 did not have a material impact on the Company's financial position or results of operations upon adoption.

ASU No. 2020-06, Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity’s Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity’s Own Equity

In August 2020, the FASB issued ASU 2020-06, *Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity’s Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity’s Own Equity* (“ASU 2020-06”). ASU 2020-06 simplifies the complexity associated with applying U.S. GAAP for certain financial instruments with characteristics of liabilities and equity. More specifically, the amendments focus on the guidance for convertible instruments and derivative scope exception for contracts in an entity's own equity. The Company early adopted the new standard, effective January 1, 2021. The adoption of ASU 2020-06 did not have an impact on the Company's financial position or results of operations upon adoption.

ASU No. 2020-08, Codification Improvements to Subtopic 310-20, Receivables - Nonrefundable Fees and Other Costs

In October 2020, the FASB issued ASU 2020-08, *Codification Improvements to Subtopic 310-20, Receivables - Nonrefundable Fees and Other Costs* (“ASU 2020-08”) to provide further clarification and update the previously issued guidance in ASU 2017-08, *Receivables - Nonrefundable Fees and Other Costs (Subtopic 310-20: Premium Amortization on Purchased Callable Debt Securities)* (“ASU 2017-08”). ASU 2017-08 shortened the amortization period for certain callable debt securities purchased at a premium by requiring that the premium be amortized to the earliest call date. ASU 2020-08 requires that at each reporting period, to the extent that the amortized cost of an individual callable debt security exceeds the amount repayable by the issuer at the next call date, the excess premium shall be amortized to the next call date. The new standard was effective beginning January 1, 2021. The adoption of ASU 2020-08 did not have a material impact on the Company's financial position or results of operations upon adoption.

ASU No. 2020-10, Codification Improvements

In October 2020, the FASB issued ASU 2020-10, *Codification Improvements* ("ASU 2020-10"). The amendments in this ASU represent changes to clarify the ASC, correct unintended application of the guidance, or make minor improvements to the ASC that are not expected to have a significant effect on current accounting practice or create a significant administrative cost to most entities. This new standard was effective beginning January 1, 2021. The adoption of ASU 2020-10 did not have a material impact on the Company's financial position or results of operations upon adoption.

3. Marketable securities

The following table summarizes the marketable securities held at September 30, 2021 and December 31, 2020 (in thousands):

Description	Amortized cost / Cost	Unrealized gains	Unrealized losses	Fair value
September 30, 2021				
U.S. government agency securities and treasuries	$ 312,483	$ 67	$ (58)	$ 312,492
Corporate bonds	111,616	7	(35)	111,588
Commercial paper	141,089	—	—	141,089
Equity securities	4,305	—	(1,205)	3,100
Total	$ 569,493	$ 74	$ (1,298)	$ 568,269
December 31, 2020				
U.S. government agency securities and treasuries	$ 675,043	$ 302	$ (74)	$ 675,271
Corporate bonds	197,171	432	(40)	197,563
Commercial paper	77,949	1	—	77,950
Equity securities	20,017	—	(14,364)	5,653
Total	$ 970,180	$ 735	$ (14,478)	$ 956,437

No available-for-sale debt securities held as of September 30, 2021 or December 31, 2020 had remaining maturities greater than five 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, 2021 and December 31, 2020 (in thousands):

Description	Total	Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
September 30, 2021				
Assets:				
Cash and cash equivalents	$ 402,461	$ 377,462	$ 24,999	$ —
Marketable securities:				
U.S. government agency securities and treasuries	312,492	—	312,492	—
Corporate bonds	111,588	—	111,588	—
Commercial paper	141,089	—	141,089	—
Equity securities	3,100	3,100	—	—
Total	$ 970,730	$ 380,562	$ 590,168	$ —
Liabilities:				
Contingent consideration	$ 1,973	$ —	$ —	$ 1,973
Total	$ 1,973	$ —	$ —	$ 1,973
December 31, 2020				
Assets:				
Cash and cash equivalents	$ 317,705	$ 317,705	$ —	$ —
Marketable securities:				
U.S. government agency securities and treasuries	675,271	—	675,271	—
Corporate bonds	197,563	—	197,563	—
Commercial paper	77,950	—	77,950	—
Equity securities	5,653	5,653	—	—
Total	$ 1,274,142	$ 323,358	$ 950,784	$ —
Liabilities:				
Contingent consideration	$ 1,509	$ —	$ —	$ 1,509
Total	$ 1,509	$ —	$ —	$ 1,509

Cash and cash equivalents

The Company considers all highly liquid securities with original final maturities of 90 days or less from the date of purchase to be cash equivalents. As of September 30, 2021, cash and cash equivalents comprise funds in cash, money market accounts, U.S. government agency securities and treasuries, and commercial paper. As of December 31, 2020, cash and cash equivalents comprise funds in cash and money market accounts.

Marketable securities

Marketable securities classified as Level 2 within the valuation hierarchy generally consist of U.S. government agency securities and treasuries, corporate bonds, and commercial paper. The Company estimates the fair values of these marketable securities by taking into consideration valuations obtained from third-party pricing sources. These pricing sources utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include market pricing based on real-time trade data for the same or similar securities, issuer credit spreads, benchmark yields, and other observable inputs. The Company validates the prices provided by its third-party pricing sources by understanding the models used, obtaining market values from other pricing sources and analyzing pricing data in certain instances.

The amortized cost of available-for-sale debt securities is adjusted for amortization of premiums and accretion of discounts to the next call date for premiums or to maturity for discounts. At September 30, 2021 and December 31, 2020, the balance in the Company's accumulated other comprehensive loss includes activity related to the Company's available-for-sale debt

securities. There were no material realized gains or losses recognized on the sale or maturity of available-for-sale debt securities during the three and nine months ended September 30, 2021 or 2020.

Accrued interest receivable on the Company's available-for-sale debt securities totaled $1.2 million and $3.1 million as of September 30, 2021 and December 31, 2020, respectively. No accrued interest receivable was written off during the three and nine months ended September 30, 2021 or 2020.

The following table summarizes available-for-sale debt securities in a continuous unrealized loss position for less than and greater than twelve months, and for which an allowance for credit losses has not been recorded at September 30, 2021 and December 31, 2020 (in thousands):

	Less than 12 months		12 months or greater		Total	
Description	Fair value	Unrealized losses	Fair value	Unrealized losses	Fair value	Unrealized losses
September 30, 2021						
U.S. government agency securities and treasuries	$ 124,322	$ (58)	$ —	$ —	$ 124,322	$ (58)
Corporate bonds	74,279	(31)	11,377	(4)	85,656	(35)
Total	$ 198,601	$ (89)	$ 11,377	$ (4)	$ 209,978	$ (93)
December 31, 2020						
U.S. government agency securities and treasuries	$ 211,384	$ (74)	$ —	$ —	$ 211,384	$ (74)
Corporate bonds	76,598	(40)	1,205	—	77,803	(40)
Total	$ 287,982	$ (114)	$ 1,205	$ —	$ 289,187	$ (114)

The Company determined that there was no material change in the credit risk of the above investments during the nine months ended September 30, 2021. As such, an allowance for credit losses was not recognized. As of September 30, 2021, the Company does not intend to sell such securities and it is not more likely than not that the Company will be required to sell the securities before recovery of their amortized cost bases.

The Company held equity securities with an aggregate fair value of $3.1 million and $5.7 million as of September 30, 2021 and December 31, 2020, respectively, within short-term marketable securities on its condensed consolidated balance sheets. In January 2021, the Company sold a portion of its equity securities for proceeds of $31.3 million. During the three months ended September 30, 2021 and 2020, the Company recorded gains of $0.5 million and losses of $5.8 million, respectively, related to its equity securities. During the nine months ended September 30, 2021 and 2020, the Company recorded gains of $28.8 million and losses of $9.1 million, respectively, related to its equity securities. Gains and losses related to equity securities are included in other income (expense), net on the condensed consolidated statements of operations and comprehensive loss.

Contingent consideration

In connection with its prior acquisition of Precision Genome Engineering, Inc. (“Pregenen”), the Company may be required to pay future consideration that is contingent upon the achievement of specified development, regulatory approvals or sales-based milestone events. 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. In the absence of new information, changes in fair value will reflect changing discount rates and the passage of time. Contingent consideration is included in accrued expenses and other current liabilities and other non-current liabilities on the condensed consolidated balance sheets. Upon the completion of the separation of its severe genetic disease and oncology programs into two separate, independent publicly traded companies in November 2021, all future obligations related to the contingent consideration described above were assumed by 2seventy bio.

Please refer to Note 9, *Commitments and contingencies*, for further information.

5. Inventory

Inventory consists of the following (in thousands):

	As of September 30, 2021	As of December 31, 2020
Raw materials	$ —	$ 8,967
Finished goods	766	1,731
Inventory	$ 766	$ 10,698

During the three and nine months ended September 30, 2021, the Company recorded a reserve for excess inventories of $14.6 million and $29.7 million, respectively, which is included within cost of royalty and other revenue within the condensed consolidated statements of operations.

6. Property, plant and equipment, net

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

	As of September 30, 2021	As of December 31, 2020
Land	$ —	$ 1,210
Building	—	15,745
Computer equipment and software	5,699	6,950
Office equipment	6,686	7,665
Laboratory equipment	59,673	55,521
Leasehold improvements	31,579	34,286
Construction-in-progress	875	92,514
Total property, plant and equipment	104,512	213,891
Less accumulated depreciation and amortization	(58,767)	(51,060)
Property, plant and equipment, net	$ 45,745	$ 162,831

North Carolina manufacturing facility

In November 2017, the Company acquired a manufacturing facility in Durham, North Carolina for the future manufacture of lentiviral vector for the Company’s gene therapies. In July 2021, the Company and National Resilience, Inc. ("Resilience") announced a strategic manufacturing collaboration aimed to accelerate the early research, development, and delivery of cell therapies. Agreements related to the collaboration were executed in September 2021. As part of the agreement, Resilience acquired the Company's manufacturing facility in Durham and retained all staff currently employed at the site. As a result of the transaction, the Company disposed of $111.2 million of net assets, primarily consisting of the building and laboratory equipment. Please refer to Note 10, *Collaborative arrangements and strategic partnerships* for further discussion.

7. Accrued expenses and other current liabilities

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

	As of September 30, 2021	As of December 31, 2020
Employee compensation	$ 95,505	$ 55,802
Manufacturing costs	21,809	22,571
Clinical and contract research organization costs	19,017	23,766
Collaboration costs	28,031	20,004
Property, plant and equipment	618	789
License and milestone fees	467	278
Professional fees	2,549	1,541
Other	35,794	20,655
Accrued expenses and other current liabilities	$ 203,790	$ 145,406

Accrued employee compensation includes severance costs associated with the Company's orderly wind down of its European operations. As of September 30, 2021, the Company had accrued expenses of $19.7 million related to these restructuring costs. Please refer to Note 16, *Reduction in Workforce*, for further discussion.

8. Leases

The Company leases certain office and laboratory space, primarily located in Cambridge, Massachusetts and Seattle, Washington. Additionally, the Company has embedded leases at various contract manufacturing organizations in both the United States and internationally. Except as described below, there have been no material changes in lease obligations from those disclosed in Note 8 to the consolidated financial statements included in the Company's 2020 Annual Report on Form 10-K.

60 Binney Street lease

In October 2021, the Company entered into a consent to assignment and amendment to its lease agreement for its 60 Binney Street Lease. The agreement reassigns the Company's interest in the lease to 2seventy bio, Inc. and releases the Company from its obligation to maintain the $13.8 million collateralized letter of credit required under the original lease. Following November 4, 2021, the date on which the separation of the Company and 2seventy bio was completed, the Company will reassess the accounting for this lease under ASC 842, *Leases*.

Seattle, Washington leases

In October 2021, the Company entered into a consent to assignment and amendment to its lease agreement for office and laboratory space in Seattle, Washington and the related sublease that was executed in September 2020 for a portion of the space. The agreement reassigns the Company's interest in the lease and the sublease to 2seventy bio, Inc. As part of the assignment, the sublease agreement associated with the expanded space was also assigned to 2seventy bio, Inc. Upon separation, the Company removed the related right-of-use asset and liability from its condensed consolidated balance sheets.

Embedded operating leases

In July 2020, the Company entered into an agreement reserving manufacturing capacity with a contract manufacturing organization. The Company concluded that this agreement contains an embedded operating lease as a controlled environment room at the facility is designated for the Company's exclusive use during the term of the agreement, with the option to sublease the space if the Company provides notice that it will not utilize it for a specified duration of time. Under the terms of the agreement, the Company will be required to pay up to $5.4 million per year in maintenance fees in addition to the cost of any services provided and may terminate this agreement with eighteen months' notice. The term of the agreement is five years, with the option to extend. The Company recorded a right-of-use asset and lease liability for this operating lease upon lease commencement in March 2021 and is recognizing rent expense on a straight-line basis throughout the remaining term of the embedded lease.

In November 2016, the Company entered into an agreement for clinical and commercial production of the Company's beti-cel, LentiGlobin for SCD, and eli-cel drug products with a contract manufacturing organization at an existing facility. In September 2021, the Company reassessed the term of this lease in light of the planned orderly wind down of its operations in Europe. As a result, the Company reduced the right-of-use asset and related lease liability to reflect a shortened expected term of the agreement.

9. Commitments and contingencies

Contingent consideration related to business combinations

In June 2014, the Company acquired Pregenen. The Company may be required to make up to $99.9 million in remaining future contingent cash payments to the former equity holders of Pregenen upon the achievement of certain commercial milestones related to the Pregenen technology. In accordance with accounting guidance for business combinations, 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 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. Upon the completion of the separation of its severe genetic disease and oncology programs into two separate, independent publicly traded companies in November 2021, 2seventy bio assumed all future obligations related to the contingent consideration described above.

Other funding commitments

The Company may be obligated to make future development, regulatory, and commercial milestone payments, and royalty payments on future sales of specified products associated with its collaboration and license agreements. Payments under these agreements generally become due and payable upon achievement of such milestones or sales. When the achievement of these milestones or sales have occurred, the corresponding amounts are recognized in the Company's financial statements. Please refer to Note 10, *Collaborative arrangements and strategic partnerships*, for further information on the Company's collaboration agreements and to Note 11, *Royalty and other revenue*, for further information on the Company's license agreements.

Additionally, the Company is party to various contracts with contract research organizations and contract manufacturers that generally provide for termination on notice, with the exact amounts in the event of termination to be based on the timing of the termination and the terms of the agreement. There have been no material changes in future minimum purchase commitments from those disclosed in Note 9 to the consolidated financial statements included in the Company's 2020 Annual Report on Form 10-K.

While there are no material legal proceedings the Company is aware of, the Company may become party to various claims and complaints arising in the ordinary course of business. The Company enters into standard indemnification agreements in the ordinary course of business. Pursuant to the 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. 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. Management does not believe that any ultimate liability resulting from any of these claims will have a material adverse effect on its results of operations, financial position, or liquidity. However, management cannot give any assurance regarding the ultimate outcome of any claims, and their resolution could be material to operating results for any particular period.

The Company also indemnifies each of its directors and officers for certain events or occurrences, subject to certain limits, while the officer or director is or was serving at the Company's request in such capacity, as permitted under Delaware law and in accordance with its certificate of incorporation and by-laws. The term of the indemnification period lasts as long as a director may be subject to any proceeding arising out of acts or omissions of such director or officer in such capacity. The maximum amount of potential future indemnification is unlimited; however, the Company currently holds director and officer liability insurance. This insurance allows the transfer of risk associated with the Company's exposure and may enable it to recover a portion of any future amounts paid. The Company believes that the fair value of these indemnification obligations is minimal. Accordingly, it has not recognized any liabilities relating to these obligations.

10. Collaborative arrangements and strategic partnerships

Bristol-Myers Squibb

In March 2013, the Company entered into a collaboration agreement with BMS. The details of the collaboration agreements and the payments the Company has received, and is entitled to receive, are further described in Note 11, *Collaborative arrangements*, to the Company's consolidated financial statements included in its Annual Report on Form 10-K for the year ended December 31, 2020. During the third quarter of 2021, there have been no changes to the terms of the Company's collaboration agreement with BMS. Upon the completion of the separation of its severe genetic disease and oncology programs into two separate, independent publicly traded companies in November 2021, 2seventy bio assumed the collaboration agreement with BMS.

Ide-cel

Under the Company's collaboration agreement with BMS, the Company shares equally in the profit and loss related to the development and commercialization of ide-cel in the United States. The Company has no remaining financial rights with respect to the development or commercialization of ide-cel outside of the United States. The Company accounts for its collaborative arrangement efforts with BMS in the United States within the scope of ASC 808 given that both parties are active participants in the activities and both parties are exposed to significant risks and rewards dependent on the commercial success of the activities. The calculation of collaborative activity to be recognized for joint ide-cel efforts in the United States is performed on a quarterly basis and is independent of previous quarterly activity. This may result in fluctuations between revenue and expense recognition period over period, depending on the varying extent of effort performed by each party during the period. The Company recognizes revenue related to the combined unit of accounting for the ex-U.S. license and lentiviral vector manufacturing services under Topic 606.

Ide-cel U.S. Share of Collaboration Profit or Loss

In March 2021, BMS received marketing approval from the U.S. Food and Drug Administration for ide-cel as a treatment for adult patients with relapsed or refractory multiple myeloma after four or more prior lines of therapy, including an immunomodulatory agent, a proteasome inhibitor, and an anti-CD38 monoclonal antibody. BMS is primarily responsible for the commercialization of ide-cel and they are the principal for commercial activity. On a quarterly basis, the Company determines its share of collaboration profit or loss for commercial activities. The Company's share of any collaboration profit for commercial activities is recognized as collaborative arrangement revenue and its share of any collaboration loss for commercial activity is recognized as an operating expense and classified as share of collaboration loss on the Company's condensed consolidated statement of operations. The Company also is responsible for equally sharing in the ongoing ide-cel research and development activities being conducted by BMS in the United States. The net amount owed to BMS for research and development activities is classified as research and development expense on the condensed consolidated statement of operations. If BMS is obligated to reimburse the Company because the Company's research and development costs exceeds BMS' research and development costs, the net amount is recorded as collaborative arrangement revenue.

During the three and nine months ended September 30, 2021, the Company recognized $13.0 million, included as a component of collaborative arrangement revenue, on the condensed consolidated statement of operations and comprehensive loss, related to its share of collaboration profit associated with ide-cel commercial activities. During the three and nine months ended September 30, 2021, the Company recognized $0.0 million and $10.1 million, included as a component of share of collaborative arrangement loss, on the condensed consolidated statement of operations and comprehensive loss, related to its share of collaboration loss associated with ide-cel commercial activities. These amounts include the Company's share of BMS' ide-cel product revenue, cost of goods sold, and selling costs, offset by any reimbursement of commercial costs incurred by the Company during the three and nine month periods.

The following table summarizes the amounts associated with the research activities under the collaboration included in research and development expense or recognized as collaborative arrangement revenue for the three and nine months ended September 30, 2021, and 2020 (in thousands):

	For the three months ended September 30,		For the nine months ended September 30,	
	2021	2020	2021	2020
ASC 808 ide-cel research and development revenue - U.S. (1) (2)	$ —	$ —	$ —	$ 108,19
ASC 808 ide-cel research and development expense - U.S. (1)	$ (5,660)	$ (16,084)	$ (31,678)	$ (21,16

(1) As noted above, the calculation of collaborative arrangement activity to be recognized for joint ide-cel efforts in the United States is performed on a quarterly basis. The calculation is independent of previous activity, which may result in fluctuations between revenue and expense recognition period over period, depending on the varying extent of effort performed by each party during the period.

(2) In the second quarter of 2020, the Company recognized $169.2 million as a cumulative catch-up adjustment to revenue recorded in connection with the May 2020 First Amendment to the Amended and Restated Co-Development, Co-Promote and Profit Share Agreement ("Amended Ide-cel CCPS"), a portion of which was recognized as ASC 808 research and development collaboration revenue. Refer to Note 11, *Collaborative arrangements*, of the Company's Annual Report on Form 10-K for further discussion on the Amended Ide-cel CCPS.

Ide-cel ex-U.S. Service Revenue

The following table summarizes the revenue recognized related to ide-cel ex-U.S. activities for the three and nine months ended September 30, 2021, and 2020 (in thousands):

	For the three months ended September 30,		For the nine months ended September 30,	
	2021	2020	2021	2020
ASC 606 ide-cel license and manufacturing revenue - ex-U.S. (1)	$ 5,314	$ 6,913	$ 14,698	$ 94,733

(1) In the second quarter of 2020, the Company recognized $169.2 million as a cumulative catch-up adjustment to revenue recorded in connection with the May 2020 First Amendment to the Amended and Restated Co-Development, Co-Promote and Profit Share Agreement ("Amended Ide-cel CCPS"), a portion of which was recognized as ASC 606 license and manufacturing revenue. Refer to Note 11, *Collaborative arrangements*, of the Company's Annual Report on Form 10-K for further discussion on the Amended Ide-cel CCPS.

bb21217

In addition to the activities related to ide-cel, BMS previously exercised its option to obtain an exclusive worldwide license to develop and commercialize bb21217, the second product candidate under the collaboration arrangement with BMS which is further described in Note 11, *Collaborative arrangements*, to the Company's consolidated financial statements included in its Annual Report on Form 10-K for the year ended December 31, 2020.

Under the collaboration arrangement with BMS, the Company has an option to co-develop and co-promote bb21217 within the United States. The Company currently expects it will exercise its option to co-develop and co-promote bb21217 within the United States. The Company's election to co-develop and co-promote bb21217 within the United States must be made by the substantial completion of CRB-402, the on-going phase 1 clinical trial of bb21217. If elected, the Company expects the responsibilities of the parties to remain largely unchanged, however, the Company expects it will share equally in all profits and losses relating to developing, commercializing and manufacturing bb21217 within the United States and to have the right to participate in the development and promotion of bb21217 within the United States. Under this scenario, the U.S. milestones and royalties payable would be adjusted and the Company would be eligible to receive a $10.0 million development milestone payment related to the development of bb21217 within the United States. The Company would not be eligible for royalties on U.S. sales of bb21217 under this scenario.

In the event the Company does not exercise its option to co-develop and co-promote bb21217, the Company will receive an additional fee in the amount of $10.0 million. Under this scenario, the Company is eligible to receive U.S. milestones of up to $85.0 million for the first indication to be addressed by bb21217 and royalties for U.S. sales of bb21217.

All of the remaining development, regulatory, and commercial milestones related to U.S. development, regulatory and commercialization activities are fully constrained and are therefore excluded from the transaction price. As part of its evaluation of the constraint, the Company considered numerous factors, including the fact that achievement of the milestones is outside the control of the Company and contingent upon the future success of its clinical trials, the licensee's efforts, or the receipt of regulatory approval. Any consideration related to U.S. sales-based milestones (including royalties) will be recognized when the related sales occur as these amounts have been determined to relate predominantly to the license granted to BMS and therefore are recognized at the later of when the performance obligation is satisfied or the related sales occur.

The transaction price associated with the collaboration arrangement consists of $31.0 million of upfront payments and option payments received from BMS and $1.8 million in variable consideration which represents reimbursement to be received

from BMS for manufacturing vector and associated payloads through development. The Company has identified two performance obligations with respect to the arrangement with BMS. The initial performance obligation was for research and development services substantially completed in September 2019, associated with the initial phase 1 clinical trial. The Company allocated $5.4 million of consideration to the research and development services performance obligation and fully recognized the consideration through September 2019. The other performance obligation relates to a combined performance obligation for the bb21217 license and vector manufacturing services through development, and the remaining $27.3 million in consideration was allocated to this combined performance obligation. The Company will satisfy this combined performance obligation as the bb21217 manufacturing services are performed. As of September 30, 2021, the Company has not commenced manufacturing and the full amount of the allocated transaction price remains unsatisfied.

The Company re-evaluates the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, each reporting period and as uncertain events are resolved or other changes in circumstances occur.

Contract assets and liabilities – ide-cel and bb21217

The Company receives payments from its collaborative partners based on billing schedules established in each contract. Up-front payments and fees are recorded as deferred revenue upon receipt or when due until such time as the Company satisfies its performance obligations under these arrangements. A contract asset is a conditional right to consideration in exchange for goods or services that the Company has transferred to a customer. Amounts are recorded as accounts receivable when the Company's right to consideration is unconditional.

The following table presents changes in the balances of the Company's BMS receivables and contract liabilities during the nine months ended September 30, 2021 (in thousands):

	Balance at December 31, 2020	Additions	Deductions	Balance at September 30, 2021
Receivables	$ 400	$ 12,661	$ (400)	$ 12,661
Contract liabilities:				
Deferred revenue	$ 26,582	$ —	$ (820)	$ 25,762

The increase in the receivables balance for the nine months ended September 30, 2021 is driven by amounts owed to the Company from BMS in the period under the settlement terms of the collaboration agreement.

The decrease in deferred revenue during the nine months ended September 30, 2021 is driven by the release of the remaining $0.8 million of deferred revenue associated with the combined performance obligation consisting of the ide-cel license and manufacturing services.

Regeneron

Regeneron Collaboration Agreement

In August 2018, the Company entered into a Collaboration Agreement (the "Regeneron Collaboration Agreement") with Regeneron pursuant to which the parties will apply their respective technology platforms to the discovery, development, and commercialization of novel immune cell therapies for cancer. In August 2018, following the completion of required regulatory reviews, the Regeneron Collaboration Agreement became effective. Under the terms of the agreement, the parties will leverage Regeneron's proprietary platform technologies for the discovery and characterization of fully human antibodies, as well as T cell receptors directed against tumor-specific proteins and peptides and the Company will contribute its field-leading expertise in gene therapy. Upon the completion of the separation of its severe genetic disease and oncology programs into two separate, independent publicly traded companies in November 2021, the collaboration agreement with Regeneron was assumed by 2seventy bio.

In accordance with the Regeneron Collaboration Agreement, the parties jointly selected six initial targets and intend to equally share the costs of research up to the point of submitting an IND application for a potential gene therapy product directed to a particular target. Additional targets may be selected to add to or replace any of the initial targets during the five-year research collaboration term as agreed to by the parties.

Regeneron will accrue a certain number of option rights exercisable against targets as the parties reach certain milestones under the terms of the agreement. Upon the acceptance of an IND for the first product candidate directed to a target, Regeneron will have the right to exercise an option for co-development/co-commercialization of product candidates directed to such target on a worldwide or applicable opt-in territory basis, with certain exceptions. Where Regeneron chooses to opt-in, the parties will share equally in the costs of development and commercialization and will share equally in any profits or losses therefrom in applicable opt-in territories. Outside of the applicable opt-in territories, the target becomes a licensed target and Regeneron would be eligible to receive, with respect to any resulting product, milestone payments of up to $130.0 million per product and royalties on net sales outside of the applicable opt-in territories at a rate ranging from the mid-single digits to low-double digits. A target would also become a licensed target in the event Regeneron does not have an option to such target, or Regeneron does not exercise its option with respect to such target.

Either party may terminate a given research program directed to a particular target for convenience, and the other party may elect to continue such research program at its expense, receiving applicable cross-licenses. The terminating party will receive licensed product royalties and milestone payments on the potential applicable gene therapy products. Where the Company terminates a given research program for convenience, and Regeneron elects to continue such research program, the parties will enter into a transitional services agreement. Under certain conditions, following its opt-in, Regeneron may terminate a given collaboration program and the Company may elect to continue the development and commercialization of the applicable potential gene therapy products as licensed products.

Regeneron Share Purchase Agreement

A Share Purchase Agreement ("SPA") was entered into by the parties in August 2018. In August 2018, the closing date of the transaction, the Company issued Regeneron 0.4 million shares of the Company's common stock, subject to certain restrictions, for $238.10 per share, or $100.0 million in the aggregate. The purchase price represents $63.0 million worth of common stock plus a $37.0 million premium, which represents a collaboration research advancement, or credit to be applied to Regeneron's initial 50 percent funding obligation for collaboration research, after which the collaborators will continue to fund ongoing research equally. The collaboration research advancement only applies to pre-IND research activities and is not refundable or creditable against post-IND research activities for any programs where Regeneron exercises their opt-in rights.

Accounting analysis – Regeneron

At the commencement of the arrangement, two units of accounting were identified, which are the issuance of 0.4 million shares of the Company's common stock and joint research activities during the five-year research collaboration term. The Company determined the total transaction price to be $100.0 million, which comprises $54.5 million attributed to the equity sold to Regeneron and $45.5 million attributed to the joint research activities. In determining the fair value of the common stock at closing, the Company considered the closing price of the common stock on the closing date of the transaction and included a lack of marketability discount because Regeneron received shares subject to certain restrictions.

The Company analyzed the joint research activities to assess whether they fall within the scope of ASC 808, and will reassess this throughout the life of the arrangement based on changes in the roles and responsibilities of the parties. Based on the terms of the arrangement as outlined above, for the collaboration research performed prior to submission of an IND application for a potential gene therapy product, both parties are deemed to be active participants in the collaboration. Both parties are performing research and development activities and will share equally in these costs through IND. Additionally, Regeneron and the Company are exposed to significant risks and rewards dependent on the commercial success of any product candidates that may result from the collaboration. As such, the collaboration arrangement is deemed to be within the scope of ASC 808.

The $45.5 million attributed to the joint research activities includes the $37.0 million creditable against amounts owed to the Company by Regeneron. The collaboration research advancement will be reduced over time for amounts due to the Company by Regeneron as a result of the parties agreeing to share in the costs of collaboration research equally. The remainder of the amount attributed to the joint research activities will be recognized over the five-year research collaboration term.

Consistent with its collaboration accounting policy, the Company will recognize collaborative arrangement revenue or research and development expense related to the joint research activities in future periods depending on the amounts incurred by each party in a given reporting period. That is, if the Company's research costs incurred exceed those research costs incurred by Regeneron in a given quarter, the Company will record collaborative arrangement revenue and reduce the original $37.0 million advance by the amount due from Regeneron until such advancement is fully utilized, after which the Company would record an amount due from Regeneron. If Regeneron's research costs incurred exceed those research costs incurred by the Company in a given quarter, the Company will record research and development expense and record a liability for the

amount due to Regeneron. As of September 30, 2021 and December 31, 2020, the Company has $25.9 million and $30.8 million, respectively, of the amount attributed to the joint research activities remaining to be recognized, which is classified as collaboration research advancement, current portion and collaboration research advancement, net of current portion on the condensed consolidated balance sheets.

The Company recognized $1.7 million and $4.9 million of collaborative arrangement revenue from the Regeneron Collaboration Agreement during the three and nine months ended September 30, 2021, respectively. The Company recognized $2.4 million and $6.2 million of collaborative arrangement revenue from the Regeneron Collaboration Agreement during the three and nine months ended September 30, 2020, respectively.

Resilience

Background

In July 2021, the Company and Resilience US, Inc. (formerly known as Resilience Boston, Inc.), an affiliate of National Resilience, Inc. ("Resilience"), signed an Asset Purchase Agreement (the “Agreement”). As part of the Agreement, and upon the closing of the transaction which occurred in September 2021, Resilience acquired the Company's lentiviral vector manufacturing facility located in Durham, North Carolina and retained staff currently employed at the site. In exchange, the Company received $110.3 million for the facility and related fixed assets.

Upon closing, the Company entered into certain ancillary agreements, including two manufacturing agreements and a license agreement (the “License Agreement”), among others (together referred to as the “Ancillary Agreements”). One manufacturing agreement will support the future manufacturing of lentiviral vector for the Company’s commercial product in collaboration with BMS, ide-cel (the “Commercial Supply Agreement”), while the other will support ongoing manufacturing for lentiviral vector for the Company's development candidates (the “Development Manufacturing Agreement”). The Company also agreed to reimburse Resilience for an amount equal to 50% of the net operating losses of and relating to the manufacturing facility’s business incurred during the twelve-month period ending on the first anniversary of the closing of the transaction, as calculated in accordance with the Agreement, subject to a cap of $15.0 million. In exchange, under the terms of the Development Manufacturing Agreement, the Company will receive up to eight batches of lentiviral vector during the twelve-month period ending on the first anniversary of the closing of the transaction. The License Agreement grants Resilience a worldwide, co-exclusive license to intellectual property controlled by the Company to perform Resilience’s obligations and exercise Resilience’s rights under the supply agreements, and a worldwide, nonexclusive right to offer certain manufacturing services to third-party customers under certain of the Company's intellectual property. Under the terms of the License Agreement, the Company may receive a high single-digit to low double-digit percentage tiered royalty based on Resilience’s gross margins for transactions entered into with parties other than the Company and which the Company's proprietary intellectual property is utilized as part of such transaction.

Under the Commercial Supply Agreement, the Company will pay fully burdened manufacturing cost plus a markup for production of vector. Under the Development Manufacturing Agreement, services, manufacture, and delivery of batches of lentiviral vector during the first twelve months from the execution of this agreement will be free of cost, as the costs of these services are represented by the net operating loss sharing arrangement outlined within the Agreement. As such, the Company has committed to a minimum purchase of at least the Company's 50% share of the net operating losses during the first twelve months from the execution of such agreement. After the first twelve months, the Company will pay Resilience the fully burdened manufacturing cost plus a markup for production of vector.

Upon the completion of the separation of its severe genetic disease and oncology programs into two separate, independent publicly traded companies in November 2021, 2seventy bio was assigned the Agreement and the Ancillary Agreements described above.

Accounting analysis - Resilience

The Company determined that the sale of the manufacturing facility was a sale of a business, as defined by ASC 805, *Business Combinations* (“ASC 805”). As such, the Company calculated the gain or loss associated with the sale of the business under ASC 810 *Consolidations* (“ASC 810”). As the sale meets the definition of a business, the Company calculated the gain or loss under ASC 810 as the consideration received less the carrying amount of the net assets and liabilities, including any allocated goodwill, acquired and assumed by Resilience as part of the sale. As part of the computation, the Company determined that approximately $1.1 million of the goodwill balance was attributable to the portion of the reporting unit related to the Durham, North Carolina facility. As such, this amount was disposed of and is reflected in the Company’s condensed, consolidated balance sheets as of September 30, 2021, as part of the sale of the facility.

The Company measured the fair value of the consideration received as the $110.3 million payment received from Resilience, future royalties under the License Agreement and any off-market component of the Ancillary Agreements. This

assessment was made by comparing the consideration received to comparable transactions for each of the identified Ancillary Agreements. The Company recognized a loss of $2.0 million for the three and nine months ended September 30, 2021, which is reflected within other income (expense) on the condensed, consolidated statements of operations and comprehensive loss related to the sale. In accordance with ASC 450, the Company will recognize future royalties received under the License Agreement in the period the contingencies are resolved and recognized as an adjustment to the consideration received as other income in the condensed, consolidated statements of operations. All future consideration has been excluded from the loss recognized in during the quarter.

11. Royalty and other revenue

The Company has out-licensed intellectual property to various third parties. Under the terms of these agreements, the Company may be entitled to royalties and milestone payments.

In April 2017, the Company entered into a worldwide license agreement with Novartis, which is further described in Note 12, *Royalty and other revenue*, to the consolidated financial statements included in the Company's 2020 Annual Report on Form 10-K. Beginning in the fourth quarter of 2017, the Company began recognizing royalty revenue from sales of tisagenlecleucel under the agreement. This license agreement was terminated effective March 2021, at which point in time Novartis was no longer required to pay the Company royalty or other payments on net sales of tisagenlecleucel or any future products. Royalty revenue recognized from sales of tisagenlecleucel is included within royalty and other revenue on the condensed consolidated statement of operations and comprehensive loss.

In April 2017, the Company entered into a worldwide license agreement with GlaxoSmithKline Intellectual Property Development Limited ("GSK"), which was assigned by GSK to Orchard Therapeutics Limited ("Orchard"), effective April 2018. The terms of this license agreement are further described in Note 12, *Royalty and other revenue*, to the consolidated financial statements included in the Company's 2020 Annual Report on Form 10-K. During the second quarter of 2021, the Company and Orchard amended this license agreement to remove the potential milestone payments related to marketing authorization of covered products. In addition, the Company and Orchard entered into a new license agreement, under which the Company licensed to Orchard certain lentiviral vector-based technologies. Financial terms of the agreement include a potential milestone payment upon the first commercial sale of a licensed product in a territory, as well as low single-digit royalties on net sales of covered products.

In May 2020, the Company entered into a non-exclusive license agreement with Juno Therapeutics, Inc. ("Juno"), a wholly-owned subsidiary of BMS, related to lentiviral vector technology to develop and commercialize CD-19-directed CAR T cell therapies. Upon regulatory approval of lisocabtagene maraleucel during the first quarter of 2021, the Company received a $2.5 million milestone payment from Juno, which is included within royalty and other revenue. Royalty revenue recognized from sales of lisocabtagene maraleucel is also included within royalty and other revenue on the condensed consolidated statement of operations and comprehensive loss.

The Company may also be obligated to pay third-party licensors as a result of revenue recognized under out-license agreements, which is included within cost of royalty and other revenue on the condensed consolidated statement of operations and comprehensive loss.

During the nine months ended September 30, 2021, the Company recognized an immaterial amount of product revenue related to the sale of beti-cel in the European Union and the related cost of goods sold, which is included within royalty and other revenue and cost of royalty and other revenue, respectively.

12. Equity

In September 2021, the Company entered into an equity purchase agreement with certain investors, pursuant to which the Company agreed to sell and issue, in a private placement offering of securities, an aggregate of (i) 2.3 million shares of the Company's common stock at a purchase price per share of $16.50 and (ii) pre-funded warrants to purchase up to 2.3 million shares of common stock (the "Pre-Funded Warrants") at an effective price of $16.49 per share ($16.49 paid to the Company upon the closing of the offering and $0.01 to be paid upon exercise of such Pre-Funded Warrants). This resulted in aggregate gross proceeds to the Company of approximately $75.0 million, before deducting placement agent fees and other offering expenses payable by the Company. The Pre-Funded Warrants can be exercised at any time or times on or after September 7, 2021, until exercised in full. The warrants have been evaluated to determine the appropriate accounting and classification pursuant to ASC 480 and ASC 815. Based on the terms of the Pre-Funded Warrants, management concluded that they should

be classified within stockholder's equity on its condensed consolidated balance sheets, with no subsequent remeasurement as long as the underlying warrant agreements are not modified or amended.

13. Stock-based compensation

In January 2021 and 2020, the number of shares of common stock available for issuance under the 2013 Stock Option and Incentive Plan ("2013 Plan") was increased by approximately 2.7 million and 2.2 million shares, respectively, as a result of the automatic increase provision of the 2013 Plan. As of September 30, 2021, the total number of shares of common stock available for issuance under the 2013 Plan was approximately 2.5 million.

Stock-based compensation expense

The Company recognized stock-based compensation expense totaling $28.3 million and $101.9 million for the three and nine months ended September 30, 2021, respectively. The Company recognized stock-based compensation expense totaling $38.8 million and $123.6 million for the three and nine months ended September 30, 2020, respectively. Stock-based compensation expense by award type included within the condensed consolidated statements of operations and comprehensive loss was as follows (in thousands):

	For the three months ended September 30,		For the nine months ended September 30,	
	2021	2020	2021	2020
Stock options	13,688	22,723	51,671	73,236
Restricted stock units	10,335	11,935	33,601	37,931
Employee stock purchase plan and other	4,315	4,160	16,591	12,473
	28,338	38,818	101,863	123,640

Stock-based compensation expense by classification included within the condensed consolidated statements of operations and comprehensive loss was as follows (in thousands):

	For the three months ended September 30,		For the nine months ended September 30,	
	2021	2020	2021	2020
Research and development	$ 13,688	$ 18,837	$ 49,324	$ 58,204
Selling, general and administrative	14,650	19,981	52,539	65,436
	$ 28,338	$ 38,818	$ 101,863	$ 123,640

Stock-based compensation of $0.1 million and $0.8 million was capitalized into inventory for the three and nine months ended September 30, 2021, respectively. Stock-based compensation of $0.3 million and $0.4 million was capitalized into inventory for the three and nine months ended September 30, 2020, respectively. As of September 30, 2021, the Company had approximately $179.1 million of unrecognized stock-based compensation expense, which is expected to be recognized over a weighted-average period of approximately 2.1 years.

Unrestricted stock awards

During the first quarter of 2021, the Company granted 0.4 million unrestricted stock awards to employees as part of its 2020 annual incentive program. In addition, the Company implemented a retention program designed to incentivize and retain employees through the separation of its severe genetic disease and oncology programs. Under the retention program, employees are entitled to a one-time bonus payment, consisting of both a cash payment and unrestricted stock awards, with the condition that the employee remains employed at the end of 2021. For the three and nine months ended September 30, 2021, respectively, the Company recognized $3.1 million and $27.1 million in expense related to this program, which includes $1.6 million and $13.6 million in stock compensation expense related to the anticipated grants of stock. During the third quarter of 2021, the Company granted 0.1 million unrestricted stock awards, related to the retention program, to those employees impacted by the orderly wind down of the Company's operations in Europe.

Stock option activity

The following table summarizes the stock option activity under the Company's equity award plans:

	Shares (in thousands)	Weighted-average exercise price per share
Outstanding at December 31, 2020	6,262	$ 105.02
Granted	1,188	$ 27.85
Exercised	(219)	$ 6.82
Canceled, forfeited, or expired	(1,557)	$ 104.89
Outstanding at September 30, 2021	5,674	$ 92.68
Exercisable at September 30, 2021	3,527	$ 111.09
Vested and expected to vest at September 30, 2021	5,373	$ 92.68

During the nine months ended September 30, 2021, 0.2 million stock options were exercised, resulting in total proceeds to the Company of $1.5 million.

Restricted stock unit activity

The following table summarizes the restricted stock unit activity under the Company's equity award plans:

	Shares (in thousands)	Weighted-average grant date fair value
Unvested balance at December 31, 2020	1,495	$ 102.34
Granted	3,268	$ 26.81
Vested	(501)	$ 114.58
Forfeited	(724)	$ 60.33
Unvested balance at September 30, 2021	3,538	$ 39.43

Employee stock purchase plan

In June 2013, the Company adopted its 2013 Employee Stock Purchase Plan ("2013 ESPP"), which authorized the initial issuance of up to a total of 0.2 million shares of the Company's common stock to participating employees. In June 2021, the Company amended the 2013 ESPP to include an additional 1.4 million shares of the Company's common stock available to participating employees. During the nine months ended September 30, 2021 and 2020, respectively, 0.1 million shares and less than 0.1 million shares of common stock were issued under the 2013 ESPP.

14. 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 tax benefit and expense recognized during the three and nine months ended September 30, 2021 is due to income taxes associated with foreign earnings.

In March 2020, the Coronavirus Aid, Relief and Economic Security Act ("CARES Act") was enacted. This law temporarily suspends and adjusts certain law changes enacted in the Tax Cuts and Jobs Act in 2017. In December 2020, the Consolidated Appropriations Act was enacted. This law modified the employee retention credit under the CARES Act and created credit extenders for certain credits. In March 2021, the American Rescue Plan Act ("ARPA") was enacted and contained extenders to the refundable employee retention credit and provided further limitations to executive compensation effective for tax years beginning after 2026. The Company has concluded that the provisions in the CARES Act, Consolidated Appropriations Act, and ARPA have an immaterial impact on the Company's income tax expense due to its cumulative losses and full valuation allowance position.

15. 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):

	For the three and nine months ended September 30,	
	2021	2020
Outstanding stock options	5,674	6,363
Restricted stock units	3,538	1,519
ESPP shares and other	946	285
	10,158	8,167

16. Reduction in Workforce

In April 2021, the Company announced its decision to withdraw ZYNTEGLO from the German market because reimbursement negotiations in Germany did not result in a price for ZYNTEGLO that reflects the value of the one-time gene therapy with potential life-long benefit for people living with TDT. A total of approximately 50 employees were impacted by this reduction. During the three months ended June 30, 2021, the Company substantially completed the implementation of this reduction and, in accordance with ASC 420, *Exit and Disposal Activities*, and ASC 712, *Nonretirement Postemployment Benefits*, recorded approximately $4.6 million of costs including severance, the portion of the employees' 2021 retention bonuses to be paid in cash, and the pro rata portion of the employees' 2021 performance bonus.

In July 2021, the Company made the decision to focus its efforts on the U.S. market for beti-cel, eli-cel, and LentiGlobin for SCD and is executing an orderly wind down of its European operations. A total of approximately 90 employees were impacted by the reduction in workforce associated with this decision. The Company recorded $20.2 million of expense, in accordance with the related accounting standards mentioned above, for the affected employees. This amount includes expense for severance, the pro rata portion of the employees' 2021 performance bonus, the portion of the European employees' 2021 retention bonuses to be paid in cash, and the portion of retention bonuses to be paid in unrestricted stock awards, which were granted on September 30, 2021. As described in Note 13, *Stock-based compensation*, the Company recorded $2.5 million of costs associated with the grant of unrestricted stock awards to affected employees as a one time payment. All costs associated with the April 2021 and July 2021 reductions are reflected within restructuring expenses in the Company's condensed consolidated statements of operations and comprehensive loss.

The Company expects that substantially all accrued restructuring charges will be paid in cash by March 31, 2022.

The following table summarizes the accrued liabilities activity recorded in connection with the reduction in workforce for the nine months ended September 30, 2021:

	Charges	Amount paid	Amounts accrued at September 30, 2021
April 2021 reduction	$ 4,625	$ (4,602)	$ 23
July 2021 reduction	20,175	(546)	19,629
Total	$ 24,800	$ (5,148)	$ 19,652

During the three and nine months ended September 30, 2021, the Company recorded approximately $20.2 million and approximately $24.8 million, respectively, in restructuring expenses. During the three months ended September 30, 2021, the Company recorded $2.5 million in research and development expenses and selling, general and administrative expenses related to the grant of unrestricted stock awards to affected employees.

17. Subsequent events

On November 4, 2021, the Company completed the separation of its oncology portfolio and programs from its severe genetic disease portfolio and programs into a separate publicly traded company, 2seventy bio. The separation was effected by means of a distribution of all of the outstanding shares of common stock of 2seventy bio on the basis of one share of 2seventy bio common stock for every three shares of bluebird bio common stock issued and outstanding on October 19, 2021, the record date for the distribution. The distribution was effected at 12:01 a.m. on November 4, 2021. On November 3, 2021, in connection with the separation, bluebird bio and 2seventy bio executed a separation agreement, a tax matters agreement, an employee matters agreement, an intellectual property license agreement, and transition services agreements, under which both companies will temporarily provide and receive certain services from each other. These agreements effectuated the separation and govern 2seventy bio's relationship with bluebird bio after the distribution. As a result of the distribution and the separation, 2seventy bio is an independent, publicly traded company, effective as of November 4, 2021.

In November 2021, the Company entered into a lease agreement with Assembly Row 5B, LLC ("Landlord") for office space located at 455 Grand Union Boulevard in Somerville, Massachusetts to serve as the Company's future headquarters. Under the terms of the arrangement, the Company will lease approximately 61,180 square feet starting at an annual rate of $45 per square foot, subject to annual increases of 2.5%, plus operating expenses and taxes. In addition, the Company will be eligible for a tenant work allowance of $160 per rentable square foot of the premises. The lease will commence on the date on which the Landlord tenders possession of the premises to the Company with any tenant work required to be performed by the Landlord substantially completed, which is anticipated to occur in the first quarter of 2022.

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 23, 2021.

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," "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 biotechnology company committed to researching, developing, and commercializing, following marketing approval, potentially transformative gene therapies for severe genetic diseases. We believe that gene therapy for severe genetic diseases has the potential to change the way patients living with these diseases are treated by addressing the underlying genetic defect that is the cause of their disease, rather than offering treatments that only address their symptoms. Our gene therapy programs in severe genetic diseases include programs for transfusion-dependent β-thalassemia (TDT), sickle cell disease (SCD), and cerebral adrenoleukodystrophy (CALD). We also expect to make focused investments in research and development efforts on optimizing our existing programs as well as on pipeline programs in severe genetic diseases

Based on our discussions with the FDA, we believe that we may be able to seek approval for eli-cel for the treatment of patients with CALD on the basis of our clinical data from our ongoing Starbeam study, safety data from our ongoing ALD-104 study, and the completed ALD-103 observational study. Our clinical studies of eli-cel are currently on clinical hold due to diagnoses of myelodysplastic syndrome likely mediated by Lenti-D lentiviral vector insertion. We believe that eli-cel continues to present a favorable benefit-risk profile for patients with CALD and, the BLA filing for eli-cel for the treatment of patients with CALD is expected for the end of 2021.

Based on our discussions with the FDA, we believe that we may be able to seek approval for beti-cel for the treatment of patients with TDT on the basis of our clinical data from our HGB-207 and HGB-212 studies supported by data from the long-term follow up protocol, as well as the earlier HGB-205 and HGB-204 studies. In September 2021, we completed the submission of our BLA to the FDA for beti-cel in adult, adolescent, and pediatric patients with β-thalassemia who require regular blood cell transfusions, across all genotypes. Based on our discussions with the FDA, we believe that we may be able to seek accelerated approval for LentiGlobin for SCD in the United States on the basis of clinical data from Group C of our ongoing HGB-206 clinical study, and with our ongoing HGB-210 clinical study providing confirmatory data for full approval.

In August 2021 we announced that we intend to focus our severe genetic disease business on the U.S. market and further invest in research and development for our core programs in TDT, SCD, and CALD in that market. As part of our strategy to focus on the U.S. market, we are executing an orderly wind down of our European operations, which we anticipate will result in a reduction of selling, general and administrative costs and will have an impact on our excess inventory analysis, which is based on forecasted consumption levels driven by sales forecasts.

On November 4, 2021, we completed the separation of our severe genetic disease and oncology programs into two separate, independent publicly traded companies, bluebird bio, Inc. and 2seventy bio, Inc., a Delaware corporation and wholly-owned subsidiary prior to the separation. bluebird bio, Inc. intends to retain focus on our severe genetic disease programs and 2seventy bio, Inc. is expected to focus on the separated oncology programs. In collaboration with BMS, 2seventy bio is commercializing ide-cel and developing bb21217 as treatments for multiple myeloma, a hematologic malignancy that develops in the bone marrow and is fatal if untreated. 2seventy bio is co-developing and co-promoting ide-cel as ABECMA in the United States with BMS and has exclusively licensed to BMS the development and commercialization rights for ide-cel outside of the United States. It has exclusively licensed the development and commercialization rights for the bb21217 product candidate to BMS, with an option for 2seventy bio to elect to co-develop and co-promote bb21217 within the United States. In March 2021, BMS received marketing approval from the FDA for ide-cel, marketed as ABECMA, as a treatment of adult patients with relapsed or refractory multiple myeloma after four or more prior lines of therapy, including an immunomodulatory agent, a proteasome inhibitor, and an anti-CD38 monoclonal antibody. Sales of ABECMA by BMS began in the second quarter of 2021. The results for the period ended September 30, 2021 reflect the combined results of the Company and 2seventy bio prior to the effectiveness of the separation, and the forward-looking statements contained within this quarterly report on Form 10-Q pertain solely to the Company, unless otherwise noted.

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 candidates in compliance with good manufacturing practices, or GMP, to conduct clinical studies of our product candidates, to provide selling, general and administrative support for these operations and to protect our intellectual property. We have generated immaterial revenues 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.

As of September 30, 2021, we had cash, cash equivalents and marketable securities of approximately $970.7 million. We have never been profitable and have incurred net losses in each year since inception. Our net loss was $216.8 million and $664.3 million for the three and nine months ended September 30, 2021, respectively, and our accumulated deficit was $3.56 billion as of September 30, 2021. Substantially all of our net losses resulted from costs incurred in connection with our research and development programs and from selling, general and administrative costs associated with our operations. We expect to continue to incur significant expenses and operating losses for at least the next several years. We expect our expenses will increase in connection with our ongoing and planned activities, as we:

- fund activities related to the potential commercial launches of our late-stage product candidates in the United States;
- add personnel to support our product development and any future commercialization efforts;
- seek regulatory approval for our product candidates;
- manufacture clinical study materials and establish the infrastructure necessary to support and develop large-scale manufacturing capabilities;
- conduct clinical studies for our clinical programs in β-thalassemia and SCD, and advance our preclinical programs into clinical development;
- increase research and development-related activities for the discovery and development of product candidates and technologies in severe genetic diseases; and
- incur costs related to the separation of our portfolio of programs and product in severe genetic disease and oncology into two separate, independent publicly traded companies.

In March 2021, we placed a portion our internal lentiviral vector manufacturing facility into service, while still completing qualification of the remaining portion. In September 2021, we completed the sale of this lentiviral vector manufacturing facility to National Resilience, Inc. Currently 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. As we seek to obtain regulatory approval for our product candidates and begin commercialization following marketing approval if obtained, we expect to incur significant commercialization expenses as we prepare for and begin product sales, marketing, commercial manufacturing, and distribution at such time. Accordingly, until we generate significant revenues from product sales at such time, we will continue to 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 product candidates.

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 when and if approved in the United States, 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.

Business update

Beginning in late 2019, the outbreak of a novel strain of coronavirus (COVID-19) has evolved into a global pandemic. As a result, we continue to experience disruptions and increased risk in our operations and those of third parties upon whom we rely, which may materially and adversely affect our business. These include disruptions and risks related to the conduct of our clinical trials, manufacturing, and commercialization efforts, as policies at various clinical sites and federal, state, local and foreign laws, rules and regulations continue to evolve, including quarantines, travel restrictions, and direction of healthcare resources toward pandemic response efforts. The COVID-19 pandemic has impacted the timing of our ongoing clinical studies, with the result of slower patient enrollment and treatment in our clinical studies and delays in post-treatment follow up visits, the impact of which has varied by clinical study and by program. It has also affected our activities with and operations at our third party manufacturers. It is unknown how long these disruptions could continue. The COVID-19 pandemic has also impacted the timing of our regulatory interactions for marketing approval across our programs. As a result of the demands upon healthcare regulatory authorities, review, inspection, and other activities related to review of regulatory submissions in drug development may be impacted, and may result in delays for an unknown period of time.

We continue to evaluate the impact of the COVID-19 global pandemic on patients, healthcare providers and our employees, as well as our operations and the operations of our business partners and healthcare communities. However, the ultimate impact of the COVID-19 pandemic on our business operations is highly uncertain and subject to change and will depend on future developments which are difficult to predict.

As of September 30, 2021, we had cash, cash equivalents and marketable securities of $970.7 million. As of completion of the separation, we had restricted cash, cash and cash equivalents, and marketable securities of approximately $518.5 million. We expect our cash, cash equivalents and marketable securities, subsequent to the amount funded to 2seventy bio, will be sufficient to fund current planned operations for at least the next twelve months from the date of issuance of these financial statements. We anticipate reduced 2022 spending, including projected savings through the move of our headquarters to Assembly Row in Somerville, Massachusetts, and the orderly wind down of our European operations. This, together with other anticipated cash inflows, which include both the potential sale of priority review vouchers that would be issued with anticipated U.S. regulatory approvals for BLAs for beti-cel and eli-cel, and the pursuit of additional cash resources through public or private equity or debt financings, are expected to further strengthen our financial condition.

Financial operations overview

Revenues

To date, we have generated immaterial revenues from the sale of products. Our revenues have primarily been derived from collaboration arrangements, out-licensing arrangements, research fees, and grant revenues.

To date, revenue recognized under our collaborative arrangements has been primarily generated from collaboration arrangement with BMS which has been assigned to 2seventy bio as part of the separation. The terms of the arrangement with respect to ide-cel contain multiple promised goods or services, which include at inception: (i) research and development services, (ii) a license to ide-cel, and (iii) manufacture of vectors and associated payload for incorporation into ide-cel under the license. These performance obligations were fully satisfied during the first quarter of 2021. As of September 2017, the collaboration also included the following promised goods or services with respect to bb21217: (i) research and development services, (ii) a license to bb21217, and (iii) manufacture of vectors and associated payload for incorporation into bb21217 under the license. We entered into an agreement with BMS to co-develop and co-promote ide-cel in March 2018, which was subsequently amended in May 2020, in which both parties will share equally in U.S. costs and profits. Revenue from our collaborative arrangements is recognized as the underlying performance obligations are satisfied.

We analyze our collaboration arrangements to assess whether they are within the scope of ASC 808, *Collaborative Arrangements* (“ASC 808”) to determine whether such arrangements involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities. This assessment is performed throughout the life of the arrangement based on changes in the responsibilities of all parties in the arrangement. For collaboration arrangements within the scope of ASC 808, we first determine which elements of the collaboration are deemed to be within the scope of ASC 808 and those that are more reflective of a vendor-

customer relationship and therefore within the scope of ASC 606, *Revenue from Contracts with Customers* (“Topic 606” or "ASC 606"). For elements of collaboration arrangements that are accounted for pursuant to ASC 808, an appropriate recognition method is determined and applied consistently, generally by analogy to Topic 606.

In arrangements where we do not deem our collaborator to be our customer, payments to and from our collaborator are presented in our condensed consolidated statements of operations based on the nature of the payments, as summarized in the table and further described below.

Nature of Payment	Statement of Operations Presentation
Our share of profits in connection with commercialization of products	Collaborative arrangement revenue
Our share of losses in connection with commercialization of products	Share of collaboration loss
Net reimbursement of our research and development expenses	Collaborative arrangement revenue
Net reimbursement of our research and development expenses	Research and development expense

Where our collaborator is the principal in the product sales, we recognize our share of any profits or losses, representing net product sales less cost of goods sold and shared commercialization and other expenses, in the period in which such underlying sales occur and costs are incurred by our collaborator. We also recognize our share of costs arising from research and development activities performed by our collaborators in the period our collaborators incur such expenses.

Non-refundable license fees paid to us are recognized as revenue upon delivery of the license provided there are no unsatisfied performance obligations in the arrangement. License revenue has historically been generated from out-license agreements, under which we may also recognize revenue from potential future milestone payments and royalties.

For arrangements with licenses of intellectual property that include sales-based royalties, including milestone payments based on the level of sales, and the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which the royalty has been allocated has been satisfied.

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 inventory;
- reimbursable costs to our partners for collaborative activities;
- facilities, depreciation, and other expenses, which include direct and allocated expenses for rent and maintenance of facilities, information technology, insurance, and other supplies in support of research and development activities;
- costs associated with our research platform and preclinical activities;
- milestones and up-front license payments;
- 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 not succeed in achieving regulatory approval for all 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, any of which could mean a significant change in the costs and timing associated with the development of our product candidates 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;
- new manufacturing processes or protocols that we may choose to or be required to implement in the manufacture of our lentiviral vector or drug product;
- regulatory feedback on requirements for regulatory approval, as well as changing standards for regulatory approval; and
- the timing and receipt of any regulatory approvals.

We plan to continue to invest in research and development for the foreseeable future as we continue to advance the development of beti-cel, eli-cel, and LentiGlobin for SCD, and conduct research and development activities in severe genetic diseases. Our research and development expenses include expenses associated with the following activities:

- for the clinical studies of beti-cel, including our Northstar-2 Study (HGB-207), our Northstar-3 Study (HGB-212), and the associated long-term follow-up protocol;
- for the clinical studies of LentiGlobin for SCD, including our HGB-206 study, our HGB-210 study, and the associated long-term follow-up protocol;
- for the clinical studies of eli-cel, including our ALD-102 study, our ALD-104 study, and the associated long-term follow-up protocol; and
- research and development activities for pipeline programs and technologies in our severe genetic disease platform.

The costs of conducting these studies include the costs related to the manufacture of clinical study materials.

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, 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 other research and development expenses in the table below:

	For the three months ended September 30,		For the nine months ended September 30,	
	2021	2020	2021	2020
	(in thousands)		(in thousands)	
beti-cel	$ 13,541	$ 12,083	$ 41,901	$ 49,077
LentiGlobin for SCD	14,365	14,851	43,557	45,611
eli-cel	11,774	11,228	41,877	34,260
ide-cel	10,879	25,856	56,451	78,097
bb21217	1,125	7,080	5,737	20,106
Preclinical programs	17,304	13,401	45,522	41,547
Total direct research and development expense	68,988	84,499	235,045	268,698
Employee-and contractor-related expenses	23,957	15,360	69,635	49,170
Stock-based compensation expense	13,688	18,837	49,324	58,204
Laboratory and related expenses[(1)]	3,063	2,747	9,668	8,329
License and other collaboration expenses[(1)]	1,181	1,053	3,386	11,980
Facility expenses	19,900	16,668	60,885	51,221
Other expenses	650	1,267	1,671	3,260
Total other research and development expenses	62,439	55,932	194,569	182,164
Total research and development expense	$ 131,427	$ 140,431	$ 429,614	$ 450,862

(1) Prior to the fourth quarter of 2020, costs within these categories were disclosed in the aggregate as "platform-related expenses."

Selling, general and administrative expenses

Selling, 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, information technology, and human resource functions. Other selling, general and administrative expenses include facility-related costs, professional fees for accounting, tax, legal and consulting services, directors' fees and expenses associated with obtaining and maintaining patents.

Share of collaboration loss

Share of collaboration loss represents our share of net loss arising from product sales less cost of goods sold and shared commercial costs and other expenses related to the commercialization of a product where the collaborator is the principal in the product sales.

Cost of royalty and other revenue

Cost of royalty and other revenue consists of expense associated with amounts owed to third party licensors as a result of revenue recognized under our out-license arrangements, reserves for excess inventory, and an immaterial amount of impairment of in-licensed rights and cost of goods sold related to product revenue.

Restructuring expenses

We record costs and liabilities associated with exit and disposal activities in accordance with ASC 420, *Exit and Disposal Cost Obligations*, and other costs and liabilities associated with postemployment nonretirement benefits in accordance with ASC 712, *Postemployment Nonretirement Benefits*. Such costs are based on the estimate of fair value in the period the liabilities are incurred. We evaluate and adjust costs as appropriate for changes in circumstances as additional information becomes available.

Change in fair value of contingent consideration

In June 2014, we acquired Precision Genome Engineering, Inc., or Pregenen. 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.

As of September 30, 2021, there are $99.9 million in future contingent cash payments related to commercial milestones. We estimate future contingent cash payments have a fair value of $2.0 million as of September 30, 2021, which are classified within accrued expenses and other current liabilities and other non-current liabilities on our condensed consolidated balance sheets.

Interest income, net

Interest income, net consists primarily of interest income earned on investments.

Other income (expense), net

Other income (expense), net consists primarily of gains and losses on equity securities held by us, gains and losses on disposal of assets, and gains and losses on foreign currency.

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 expected business and operational changes, sensitivity and volatility associated with the assumptions used in developing estimates, and whether historical trends are expected to be representative of future trends. 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. During the nine months ended September 30, 2021, there were no material changes to our critical accounting policies as reported in our Annual Report on Form 10-K for the year ended December 31, 2020, which was filed with the SEC on February 23, 2021, except as otherwise described in Note 2, *Basis of presentation, principles of consolidation and significant accounting policies*, in the Notes to Condensed Consolidated Financial Statements.

Results of Operations

Comparison of the three months ended September 30, 2021 and 2020:

	For the three months ended September 30,		
	2021	2020	Change
	(in thousands)		
Revenue:			
Service revenue	$ 6,312	$ 13,352	$ (7,040)
Collaborative arrangement revenue	14,831	2,422	12,409
Royalty and other revenue	1,534	3,499	(1,965)
Total revenues	22,677	19,273	3,404
Operating expenses:			
Research and development	131,427	140,431	(9,004)
Selling, general and administrative	68,277	68,046	231
Cost of royalty and other revenue	19,704	1,318	18,386
Restructuring expenses	20,175	—	20,175
Change in fair value of contingent consideration	48	(828)	876
Total operating expenses	239,631	208,967	30,664
Loss from operations	(216,954)	(189,694)	(27,260)
Interest income, net	319	1,964	(1,645)
Other expense, net	(294)	(6,686)	6,392
Loss before income taxes	(216,929)	(194,416)	(22,513)
Income tax benefit (expense)	113	(329)	442
Net loss	$ (216,816)	$ (194,745)	$ (22,071)

Revenues. Total revenue was $22.7 million for the three months ended September 30, 2021, compared to $19.3 million for the three months ended September 30, 2020. The increase of $3.4 million was primarily attributable to collaborative arrangement revenue recognized under our collaboration arrangement with BMS, driven by our share of ide-cel profits for the third quarter of 2021.

Research and development expenses. Research and development expenses were $131.4 million for the three months ended September 30, 2021, compared to $140.4 million for the three months ended September 30, 2020. The overall decrease of $9.0 million was primarily attributable to the following:

- $10.1 million of decreased collaboration research funding costs, primarily driven by a decrease in expense recognized under our collaboration arrangement with BMS due to decreased research and development costs as a result of ide-cel commercialization;
- $5.4 million of decreased stock-compensation expense due to attrition and an overall decrease in the value of awards;
- $4.4 million of decreased clinical trial costs; and
- $3.4 million of decreased manufacturing expenditures, primarily driven by an overall decrease in manufacturing activity and partially offset by increased manufacturing capacity and maintenance fees incurred under an agreement with one of our contract manufacturing organizations.

These decreased costs were partially offset by:

- $6.6 million of increased employee compensation, benefit, and other headcount related expenses, primarily driven by our employee retention program which commenced during the first quarter of 2021;
- $5.2 million of increased license and milestone fees; and
- $4.0 million of increased information technology and facility-related costs.

Selling, general and administrative expenses. Selling, general and administrative expenses were $68.3 million for the three months ended September 30, 2021, compared to $68.0 million for the three months ended September 30, 2020. The overall increase of $0.2 million was primarily attributable to $6.8 million of increased consulting and professional fees associated with the on-going project to separate our severe genetic disease and oncology programs into two separate, independent publicly traded companies.

These increased costs were partially offset by:

- $4.4 million of decreased stock-based compensation expense due to attrition and an overall decrease in the value of awards; and
- $1.9 million of decreased commercial-readiness costs due to our decision to focus our efforts on the U.S. market for beti-cel, eli-cel, and LentiGlobin for SCD.

Cost of royalty and other revenue. Cost of royalty and other revenue was $19.7 million for the three months ended September 30, 2021, compared to $1.3 million for the three months ended September 30, 2020. The increase is primarily attributable to reserves for excess inventory recognized during the second and third quarters of 2021 based on forecasted consumption levels as of September 30, 2021.

Restructuring expenses. The increase in restructuring expenses is primarily related to the costs associated with the reduction in workforce as a result of our decision to wind down our European operations.

Change in fair value of contingent consideration. The change in fair value of contingent consideration was primarily due to the change in significant unobservable inputs used in the fair value measurement of contingent consideration, including the probabilities of successful achievement of clinical and commercial milestones and discount rates.

Interest income, net. The decrease in interest income, net was primarily related to decreased interest income earned on investments due to an overall decrease in investments.

Other expense, net. The decrease in other expense, net was primarily related to changes in fair value of equity securities.

Comparison of the nine months ended September 30, 2021 and 2020:

	For the nine months ended September 30,		
	2021	2020	Change
	(in thousands)		
Revenue:			
Service revenue	$ 17,544	$ 108,542	$ (90,998)
Collaborative arrangement revenue	18,020	114,398	(96,378)
Royalty and other revenue	7,379	17,086	(9,707)
Total revenues	42,943	240,026	(197,083)
Operating expenses:			
Research and development	429,614	450,862	(21,248)
Selling, general and administrative	229,708	209,922	19,786
Share of collaboration loss	10,071	—	10,071
Cost of royalty and other revenue	37,286	3,897	33,389
Restructuring expenses	24,800	—	24,800
Change in fair value of contingent consideration	464	(5,591)	6,055
Total operating expenses	731,943	659,090	72,853
Loss from operations	(689,000)	(419,064)	(269,936)
Interest income, net	1,468	10,258	(8,790)
Other income (expense), net	23,375	(9,582)	32,957
Loss before income taxes	(664,157)	(418,388)	(245,769)
Income tax expense	(169)	(433)	264
Net loss	$ (664,326)	$ (418,821)	$ (245,505)

Revenues. Total revenue was $42.9 million for the nine months ended September 30, 2021, compared to $240.0 million for the nine months ended September 30, 2020. The decrease of $197.1 million was primarily attributable to a cumulative catch-up adjustment to revenue recorded in connection with the May 2020 BMS contract modification in the second quarter of 2020.

Research and development expenses. Research and development expenses were $429.6 million for the nine months ended September 30, 2021, compared to $450.9 million for the nine months ended September 30, 2020. The overall decrease of $21.2 million was primarily attributable to the following:

- $37.5 million of decreased manufacturing-related expenditures, primarily driven by the capitalization of commercial inventory in the first half of 2021 and an overall decrease in manufacturing activity. This decrease was partially offset by increased manufacturing capacity and maintenance fees incurred under an agreement with one of our contract manufacturing organizations;
- $9.3 million of decreased stock-based compensation expense due to attrition and an overall decrease in the value of awards; and
- $8.8 million of decreased clinical trial costs, primarily driven by the clinical hold from February 2021 to June 2021 in our studies of LentiGlobin for SCD.

These decreased costs were partially offset by:

- $19.5 million of increased employee compensation, benefit, and other headcount related expenses, primarily driven by our employee retention program which commenced during the first quarter of 2021; and
- $14.8 million of increased collaboration research funding costs, which represents our share of research and development costs under our collaboration with BMS. The increase is also attributable to our recognition of collaborative arrangement revenue rather than collaboration expense in the second quarter of 2020 as a result of the May 2020 contract modification with BMS.

Selling, general and administrative expenses. Selling, general and administrative expenses were $229.7 million for the nine months ended September 30, 2021, compared to $209.9 million for the nine months ended September 30, 2020. The overall increase of $19.8 million was primarily attributable to the following:

- $16.5 million of increased employee compensation, benefit, and other headcount related expenses, primarily driven by our employee retention program which commenced during the first quarter of 2021; and
- $21.0 million of increased consulting and professional fees associated with the on-going project to separate our severe genetic disease and oncology programs into two separate, independent publicly traded companies.

These increased costs were partially offset by:

- $11.0 million of decreased stock-based compensation expense due to attrition and an overall decrease in the value of awards; and
- $3.8 million of decreased commercial readiness costs, driven by the temporary suspension of the marketing of beti-cel in light of safety events reported in February 2021 in the HGB-206 study of LentiGlobin for SCD.

Share of collaboration loss. Share of collaboration loss represents our share of net loss arising from the commercialization of ide-cel, under the BMS collaboration. BMS is the principal seller in the sales of ide-cel and they received marketing approval for ide-cel in March 2021. Net loss from commercialization represents our share of gross product revenue from product sales less cost of goods sold and selling costs offset by the reimbursement of a portion of commercial related costs incurred by us during the quarter.

Cost of royalty and other revenue. Cost of royalty and other revenue was $37.3 million for the nine months ended September 30, 2021, compared to $3.9 million for the nine months ended September 30, 2021. The increase is primarily attributable to reserves for excess inventory recognized during the second and third quarters of 2021 based on forecasted consumption levels as of September 30, 2021.

Restructuring expenses. The increase in restructuring expenses is primarily related to the costs associated with the reduction in workforce as a result of our decision to wind down our European operations.

Change in fair value of contingent consideration. The change in fair value of contingent consideration was primarily due to the change in significant unobservable inputs used in the fair value measurement of contingent consideration, including the probabilities of successful achievement of clinical and commercial milestones and discount rates.

Interest income, net. The decrease in interest income, net was primarily related to decreased interest income earned on investments due to an overall decrease in investments.

Other income (expense), net. The change in other income (expense), net was primarily related to the gain recognized on equity securities.

Liquidity and Capital Resources

As of September 30, 2021, we had cash, cash equivalents and marketable securities of approximately $970.7 million. As of completion of the separation, we had restricted cash, cash and cash equivalents, and marketable securities of approximately $518.5 million. We expect our cash, cash equivalents, and marketable securities, net of the amount funded to 2seventy bio, will be sufficient to fund planned operations for at least the next twelve months from the date of issuance of these financial statements. We anticipate reduced 2022 spending, including projected savings through the move of our headquarters to Assembly Row in Somerville, Massachusetts, and the orderly wind down of our European operations. This, together with other anticipated cash inflows, which include both the potential sale of priority review vouchers that would be issued with anticipated U.S. regulatory approvals of BLAs for beti-cel and eli-cel, and the pursuit of additional cash resources through public or private equity or debt financings, are expected to further strengthen our financial condition. 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, 2021, our funds are primarily held in U.S. Treasury securities, U.S. government agency securities, equity securities, corporate bonds, commercial paper, and money market accounts.

We have incurred losses and cumulative negative cash flows from operations since our inception in April 1992, and as of September 30, 2021 we had an accumulated deficit of $3.56 billion. We expect that our research and development and selling, 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.

The likelihood of our long-term success must be considered in light of the expenses, difficulties, and potential delays to be encountered in the development and commercialization of new pharmaceutical products, competitive factors in the marketplace and the complex regulatory environment in which we operate. We may never achieve significant revenue or profitable operations.

Sources of Liquidity

Cash Flows

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

	For the nine months ended September 30,	
	2021	2020
	(in thousands)	
Net cash used in operating activities	$ (495,914)	$ (315,158)
Net cash provided by (used in) investing activities	501,625	(233,161)
Net cash provided by financing activities	80,060	545,283
Net increase in cash, cash equivalents and restricted cash	$ 85,771	$ (3,036)

Cash Flows from Operating Activities. The $180.8 million increase in cash used in operating activities for the nine months ended September 30, 2021 compared to the nine months ended September 30, 2020 was primarily due to the increase in net loss during this period of $245.5 million, which was driven by a cumulative catch-up adjustment to revenue recorded in connection with the May 2020 BMS contract modification in the second quarter of 2020. Cash used in operating activities was also driven by changes in operating assets and liabilities.

Cash Flows from Investing Activities. The $734.8 million increase in cash provided by investing activities for the nine months ended September 30, 2021 was primarily due to a decrease in cash used to purchase marketable securities of $543.0 million, and increase in proceeds from maturities of marketable securities of $79.9 million compared to the nine months ended September 30, 2020. It was also driven by the sale of the Durham, North Carolina manufacturing facility, which resulted in proceeds of $110.3 million.

Cash Flows from Financing Activities. The $465.2 million decrease in cash provided by financing activities was primarily driven by a decrease of $541.5 million in proceeds from public offering of common stock, net of issuance costs, offset by an increase in proceeds from issuance of common stock and warrants of $75.0 million during the nine months ended September 30, 2021 compared to the nine months ended September 30, 2020.

Contractual Obligations and Commitments

Except as discussed in Note 8, *Leases*, and Note 9, *Commitments and contingencies*, in the Notes to Condensed Consolidated Financial Statements, there have been no material changes to our contractual obligations and commitments as included in our Annual Report on Form 10-K, which was filed with the SEC on February 23, 2021.

Off-Balance Sheet Arrangements

As of September 30, 2021, 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, 2021 and December 31, 2020, we had cash, cash equivalents and marketable securities of $970.7 million and $1.27 billion, respectively, primarily invested in U.S. government agency securities and Treasuries, equity securities, corporate bonds, commercial paper and money market accounts invested in 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, 2021, the net fair value of our interest-sensitive marketable securities would have resulted in a hypothetical decline of approximately $4.1 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 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, 2021, 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 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, 2021, 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, 2021 there were 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, 2021, 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 Annual Report on Form 10-K, 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 Form 10-K filed with the Securities and Exchange Commission, or the SEC, on February 23, 2021.*

Our business may be materially and adversely affected by the ongoing COVID-19 pandemic. The COVID-19 pandemic has had, and may continue to have, an impact on various aspects of our business and that of third parties on which we rely. The extent to which the COVID-19 pandemic impacts our business will depend in part on future developments, which are uncertain and unpredictable in nature.

In December 2019, a novel strain of coronavirus (COVID-19) was reported and in March 2020, the World Health Organization characterized COVID-19 as a pandemic. The COVID-19 pandemic, which has continued to spread, and the related adverse public health developments, including orders to shelter-in-place, travel restrictions, and the imposition of additional requirements on businesses, have adversely affected workforces, organizations, healthcare communities, economies, and financial markets globally, leading to an economic downturn and increased market volatility. It has also disrupted the normal operations of businesses across industries, including ours. As a result of the COVID-19 pandemic, we are experiencing disruptions in our operations and business, and those of third parties upon whom we rely. For instance, we have experienced disruptions in the conduct of our clinical trials, manufacturing and commercialization efforts, including the commercial launch of beti-cel in Europe and the treatment of patients in the commercial context. We cannot reasonably assess or predict at this time the full extent of the negative impact that the COVID-19 pandemic and related effects may have on our business, financial condition, results of operations and cash flows. We expect to continue experiencing these disruptions in our operations and those of our third parties for an unknown period of time, as the trajectory of the COVID-19 pandemic remains uncertain and continues to evolve in the United States and globally. These impacts, which may materially and adversely affect our business, include the following:

- We are conducting a number of clinical studies across our programs in geographies which are affected by the COVID-19 pandemic. The COVID-19 pandemic has had, and will likely continue to have, an impact on various aspects of our clinical studies. Policies at various clinical sites and federal, state, local and foreign laws, rules and regulations are continuing to evolve, including through the implementation of quarantines and travel restrictions, and direction of healthcare resources toward pandemic response efforts. For instance, the availability of intensive care unit beds and related healthcare resources available to support activities unrelated to COVID-19 response have fluctuated with the incidence of severe cases of COVID-19 in the surrounding communities, and we anticipate that the availability of healthcare resources will continue to fluctuate and may become significantly constrained, with variability across geographies. The COVID-19 pandemic has disrupted the conduct of our ongoing clinical studies, with the result of slower patient enrollment and treatment as well as delays in post-treatment patient follow-up visits. These impacts have varied by clinical study, with the most significant impacts being on our ongoing HGB-210 study for LentiGlobin for SCD. It is possible that these delays may impact the timing of our regulatory submissions. It is unknown how long these disruptions could continue.
- We currently rely on third parties to manufacture, perform quality testing, and ship our lentiviral vectors and drug products for our clinical studies and support commercialization efforts. The third parties in our supply chain have been, may continue to be, and in the future may be, subject to restrictions in operations arising from the COVID-19

pandemic, and in addition, a number of these third parties have experienced operational disruptions, which have affected activities necessary for our research, development, and commercialization efforts. These restrictions and disruptions in operations have also given rise to staffing shortages from time to time, which may result in production slowdowns and/or disruptions in delivery systems, potentially interrupting our supply chain and limiting our ability to manufacture our lentiviral vectors and drug products for our clinical studies and for commercial use. At this time, it is unknown how long these disruptions may continue, or the full extent of their impacts.

- The operations of health regulatory agencies globally have been impacted as a result of the COVID-19 pandemic. They have communicated slower response times to regulatory interactions and submissions and, in the future, may lack resources to continue to monitor our clinical studies or to engage in other activities related to review of regulatory submissions in drug development. As a result, timelines for the review of regulatory submissions for our programs have been impacted, and we may experience other delays of unknown duration in the review, inspection, and other regulatory interactions. Any de-prioritization of our clinical studies or delay in regulatory review or interaction resulting from such disruptions could materially affect the development of our product candidates. In addition, we have been engaging in reimbursement discussions with governmental health programs as part of our commercial preparation activities.
- The trading prices for our shares of common stock and other biopharmaceutical companies have been highly volatile as a result of the economic volatility and uncertainty caused by the COVID-19 pandemic. As a result, we may face difficulties raising capital through sales of shares of our common stock or such sales may be on unfavorable terms. In addition, a recession, depression or other sustained adverse market event resulting from the spread of, or failure to manage or contain, the COVID-19 pandemic will materially and adversely affect our business, the value of our common stock, and our ability to operate under our operating plan and execute our strategy. Our business and operating plan have already been impacted by the COVID-19 pandemic, the associated governmental restrictions, and the resulting economic conditions, leading us to reduce and defer costs, adjust our priorities, timelines and expectations, and review and revise our operating plans in 2020 and again in 2021 with the intention that it would enable us to advance our corporate strategy and pipeline during this extended period of uncertainty.

The extent of the impacts described above will depend on numerous evolving factors that we may not be able to accurately predict, including:

- the duration, severity, and scope of the pandemic in the United States and globally;
- the effectiveness of governmental, business and individuals' protocols and actions that have been and continue to be taken in response to the pandemic;
- the impact of the pandemic on economic activity and actions taken in response;
- the effect on patients, healthcare providers and business partners;
- uncertainty as to when we will be able to resume normal clinical study enrollment and patient treatment or follow up activities, particularly at clinical study sites located in highly impacted geographies as a result of disruptions at these sites;
- the ability to obtain or deliver sufficient and timely supplies, given the disruptions to the production capabilities of our manufacturers and suppliers, particularly with respect to the priority given to the development, regulatory approval, and manufacture of COVID-19 vaccines;
- our access to the debt and equity markets on satisfactory terms, or at all;
- disruptions in regulatory oversight and actions, as a result of significant and unexpected resources expended to address the COVID-19 by regulators and industry professionals; and
- any closures of our and our partners' offices, operations and facilities.

The ultimate impact of the COVID-19 pandemic on our business operations is highly uncertain and subject to change and will depend on future developments which are difficult to predict, including the duration of the pandemic, the ultimate geographic spread of the disease, additional or modified government actions, new information that will emerge concerning the severity and impact of COVID-19 and other actions taken to contain or address its impact in the short and long term, among others. We do not yet know the full extent of potential delays or impacts on our business, our clinical studies, our research programs, our commercial-readiness activities in the United States, healthcare systems or the global economy. If the ultimate impact of the COVID-19 pandemic and the resulting uncertain economic and healthcare environment is more severe than we anticipated, we may not be able to execute on our current operating plan or on our strategy. If the duration of the COVID-19 pandemic and the associated period of business and social restrictions and economic uncertainty is longer than we anticipated, our cash, cash equivalents, and marketable securities may not be sufficient to fund the activities under our operating plan for the

time period that we anticipated, and we may be required to revise our operating plan further. To the extent the COVID-19 pandemic adversely affects our business and financial results, it may also have the effect of heightening many of the other risks described in this "Risk Factors" section.

Risks related to commercialization

We have limited experience as a commercial company and the marketing and sale of beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, may be unsuccessful or less successful than anticipated.

We have limited experience as a commercial company. To-date, our experience as a commercial company has been limited to commercializing beti-cel in the European Union. In August 2021, we announced that we are focusing our efforts in the near-term on the U.S. market and plan to execute an orderly wind down of our European operations. Consequently, there is limited information about our ability to overcome many of the risks and uncertainties encountered by companies commercializing products in the biopharmaceutical industry. To execute our business plan, we will need to successfully:

- gain regulatory acceptance for the development and commercialization of beti-cel, eli-cel, and LentiGlobin for SCD;
- obtain adequate pricing and reimbursement for beti-cel, eli-cel, and LentiGlobin for SCD;
- establish and maintain, in the geographies where we hope to treat patients, relationships with qualified treatment centers who will be treating the patients who receive beti-cel, eli-cel, and LentiGlobin for SCD;
- manage our spending as costs and expenses increase due to clinical trials, marketing approvals, and commercialization, including for any extension of marketing approval of beti-cel, eli-cel, and LentiGlobin for SCD; and
- develop and maintain successful strategic alliances.

If we are not successful in accomplishing these objectives, we may not be able to develop and commercialize beti-cel, eli-cel, or LentiGlobin for SCD, raise capital, expand our business, or continue our operations.

The commercial success of beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, will depend upon the degree of market acceptance by physicians, patients, third-party payers and others in the medical community.

The commercial success of beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, will depend in part on the medical community, patients, and third-party or governmental payers accepting gene therapy products in general, and beti-cel, eli-cel, and LentiGlobin for SCD, in particular, as medically useful, cost-effective, and safe. Beti-cel, eli-cel, and LentiGlobin for SCD that we may bring to the market may not gain market acceptance by physicians, patients, payers 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 beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, 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 potential products 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 potential products;
- publicity concerning our potential products, or competing products and treatments; and
- sufficient 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 payers on the benefits of our potential products may require significant resources and may never be successful. For instance, following marketing approval of beti-cel in the European Union, we did not reach agreement with payers on an acceptable price for reimbursement in our priority markets in Europe, and we have withdrawn our marketing authorization for eli-cel in Europe, and intend to withdraw our marketing authorizations in Europe for beti-cel in early 2022. We can make no assurances as to when we, or any future licensee or commercialization partner, will resume marketing of beti-cel or begin marketing eli-cel in Europe, if ever. Our efforts to educate the marketplace may require more resources than are required by the conventional technologies marketed by our competitors. Any of these factors may cause beti-cel, eli-cel, or LentiGlobin for SCD, to be unsuccessful or less successful than anticipated.

If the market opportunities for our potential products are smaller than we believe they are, and if we are not able to successfully identify patients and achieve significant market share, our revenues may be adversely affected and our business may suffer.

We focus our research and product development on treatments for severe genetic diseases and cancer. 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 potential products, are based on estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or market research, and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these diseases. The number of patients may turn out to be lower or more difficult to identify than expected. Additionally, the potentially addressable patient population for our potential products may be limited or may not be amenable to treatment with our potential products. For instance, in our HGB-206 clinical study of LentiGlobin for SCD, we have received notice of safety events of acute myeloid leukemia or myelodysplastic syndrome, and additional such events may be reported in the future. If these safety events are shown to be related to the use of our lentiviral vector in the manufacture of the gene therapy or the use of myeloablative regimens prior to treatment, or if we are not able to rule out our drug product as a potential cause, the market opportunity for our gene therapies may be negatively impacted even if our gene therapies ultimately receive marketing approval.

Even if we obtain significant market share for a product within an approved indication, because the potential target populations for our potential products are small, we may never achieve profitability without obtaining marketing approval for additional indications.

Any of these factors may negatively affect our ability to generate revenues from sales of our potential products and our ability to achieve and maintain profitability and, as a consequence, our business may suffer.

We rely on a complex supply chain for beti-cel, eli-cel, and LentiGlobin for SCD. The manufacture and delivery of our lentiviral vector and drug products present significant challenges for us, and we may not be able to produce our vector and drug products at the quality, quantities, locations or timing needed to support commercialization following marketing approval if and when obtained and our clinical programs. In addition, we may encounter challenges with engaging or coordinating with qualified treatment centers needed to support commercialization following marketing approval if and when obtained.

In order to commercialize beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, we will need to develop, contract for, or otherwise arrange for the necessary manufacturing capabilities. We currently rely on third parties to manufacture the lentiviral vectors and the drug product for any clinical trials that we conduct. We have not secured all of the commercial-scale manufacturing capacity that we anticipate requiring for the commercialization of our product candidates, if they should receive marketing approval. If we fail to secure adequate capacity to manufacture our drug products or lentiviral vectors used in the manufacture of our drug products, we may be unable to execute on our development and commercialization plans on the timing that we expect, or at all.

The manufacture of lentiviral vectors and drug products is complex and requires significant expertise. Even with the relevant experience and expertise, manufacturers of cell therapy products often encounter difficulties in production, particularly in scaling out and validating initial production, managing the transition from clinical manufacturing to manufacturing in the commercial setting, and ensuring that the product meets required specifications. These problems include difficulties with production costs and yields, quality control, including stability of the product, quality assurance testing, operator error, shortages of qualified personnel, as well as compliance with strictly enforced federal, state and foreign regulations. We cannot make any assurances that these problems will not occur in the future, or that we will be able to resolve or address in a timely manner or with available funds problems that occur. Because of this complexity, transitioning production of either lentiviral vectors or drug products to backup or second source manufacturing, or to internal manufacturing capacity, requires a lengthy technology transfer process and may require additional significant financial expenditures. Furthermore, our cost of goods development is at an early stage. The actual cost to manufacture our lentiviral vectors and drug products could be greater than

we expect and could materially and adversely affect the commercial viability of beti-cel, eli-cel, or LentiGlobin for SCD. If we or such third-party manufacturers are unable to produce the necessary quantities of lentiviral vectors and our drug products, or in compliance with GMP or other pertinent regulatory requirements, and within our planned time frame and cost parameters, the development and commercialization of our potential products may be materially harmed. Furthermore, if we or our third-party manufacturers are unable to produce our lentiviral vectors or our drug products in quantities, in accordance with regulatory requirements, including quality requirements, or within the time frames that we need to support our development and commercialization activities, it may result in delays in our plans or increased capital expenditures.

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 beti-cel, eli-cel, and LentiGlobin for SCD. Such suppliers may not sell these key materials to us or 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 agreements for the commercial supply for all of these key materials.

Additionally, since the HSCs used as starting material for drug products have a limited window of stability following procurement from a patient, we must establish transduction facilities in the regions where we wish to commercialize beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained. 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.

Our commercial strategy is to engage apheresis and transplant centers as qualified treatment centers for the collection of patient HSCs and infusion of the drug product once manufactured. To ensure that the qualified treatment centers are prepared to collect patient HSCs and to ship them to our transduction facilities in accordance with our specifications and regulatory requirements, we train and conduct quality assessments of each center as part of engagement. These qualified treatment centers are the first and last points on our complex supply chain to reach patients in the commercial setting. We may not be able to engage qualified treatment centers in all of the regions in our commercial launch strategy, or we may encounter other challenges or delays in engaging qualified treatment centers. We may fail to manage the logistics of collecting and shipping patient material to the manufacturing site and shipping the drug product back to the patient. Logistical and shipment delays and problems caused by us, our third-party vendors, and other factors not in our control, such as weather, could prevent or delay the delivery of product to patients. If our qualified treatment centers fail to perform satisfactorily, we may suffer reputational, operational, and business harm. We are required to maintain a complex chain of identity and chain of custody with respect to patient material as it moves through the manufacturing process, from the qualified treatment center to the transduction facility, and back to the patient. Failure to maintain chain of identity and chain of custody could result in adverse patient outcomes, loss of product or regulatory action.

We have limited sales and distribution experience and limited capabilities for marketing and market access. We expect to invest significant financial and management resources to establish these capabilities and infrastructure to support commercial operations following marketing approval if and when obtained. If we are unable to establish these commercial capabilities and infrastructure or to enter into agreements with third parties to market and sell our potential products, we may be unable to generate sufficient revenue to sustain our business.

We have limited prior sales or distribution experience and limited capabilities for marketing and market access, and we have yet to generate meaningful product sales following the commercial launch of beti-cel in Europe following marketing approval. To successfully commercialize beti-cel, eli-cel, and LentiGlobin for SCD following marketing approval, if and when obtained, we will need to further develop these capabilities. We may need to expand our infrastructure to support commercial operations in the United States, either on our own or with others. Commercializing an autologous gene therapy is resource-intensive and has required, and will continue to require, substantial investment in commercial capabilities. We are competing with companies that currently have extensive and well-funded marketing and sales operations. Without significant commercial experience as a company or the support of a third-party to perform these functions, including marketing and sales functions, we may be unable to compete successfully against these more established companies. Furthermore, a significant proportion of the patient populations for beti-cel, eli-cel, and LentiGlobin for SCD lies outside of the United States. We currently expect to focus our operations and efforts on markets in the United States and intend to rely heavily on third parties for geographies outside of the United Sates. We may enter into collaborations with third parties to utilize their mature marketing and distribution capabilities, but we may be unable to enter into agreements on favorable terms, if at all. If we do not enter into collaboration arrangements with third parties to pursue regulatory authorization or commercialization of our programs for markets outside of the United States, or if our future collaborative partners do not commit sufficient resources to such efforts, we may be unable to generate sufficient revenue to sustain our business.

The insurance coverage and reimbursement status of newly-approved products in the United States is uncertain. Due to the novel nature of our technology and the potential for our product to offer lifetime therapeutic benefit in a single administration, we face additional challenges in obtaining adequate pricing and reimbursement for our product. Failure to obtain or maintain adequate coverage and reimbursement for any new or current product 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 payers is essential for most patients to be able to afford expensive treatments, such as gene therapy products. Sales of our potential products will depend substantially, both domestically and abroad, on the extent to which the costs of our potential products 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 payers. There is no assurance that the approved prices or reimbursement levels that payers will be willing to pay will be acceptable to us. In addition, because our therapies represent new treatment approaches, the estimation of potential revenues will be complex.

There is significant uncertainty related to the insurance coverage and reimbursement of newly approved products, including gene therapies that are potential one-time treatments. 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, or HHS, as CMS decides whether and to what extent a new medicine will be covered and reimbursed under Medicare. Private payers 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.

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 with the reimbursement experienced by the initial gene therapies to receive marketing authorization may create an adverse environment for reimbursement of other gene therapies. An increasing number of countries are taking initiatives to attempt to reduce large budget deficits by focusing cost-cutting efforts on pharmaceuticals for their state-run health care systems. These international price control efforts have impacted all regions of the world, but have been most drastic in the European Union. Additionally, some countries require approval of the sale price of a product before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. As a result, we might obtain marketing approval for a product in a particular country, but then may experience delays in the reimbursement approval of our product or be subject to price regulations that would delay our commercial launch of the product, possibly for lengthy time periods, which could negatively impact the revenues we are able to generate or recognize from the sale of the product in that particular country.

Moreover, increasing efforts by governmental and third-party payers, 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 beti-cel, eli-cel, or LentiGlobin for SCD following marketing approval, if and when obtained. We expect to experience pricing pressures in connection with the sale of our potential products, due to the trend toward managed healthcare, the increasing influence of health maintenance organizations and additional legislative changes. Net prices for drugs may be reduced by mandatory discounts or rebates required by government or private payers and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. 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.

Furthermore, because our target patient populations are relatively small, the pricing and reimbursement of our potential products must be adequate to cover the costs to treat and support the treatment of patients. If we are unable to obtain adequate levels of reimbursement, our ability to successfully market and sell our potential products will be adversely affected. 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.

In addition, the administration of autologous drug products requires procedures for the collection of HSCs from the patient, followed by chemotherapy and myeloablative treatments, before infusion of the engineered cell therapy product. The manner and level at which reimbursement is provided for these services is also important. Inadequate reimbursement for such services may lead to physician resistance and adversely affect our ability to market or sell our product.

Although we have proposed novel payment models, including outcomes-based arrangements with payments over time, to assist with realizing the value and sharing the risk of a potential one-time treatment, we did not reach agreement with payers on an acceptable price for reimbursement in our priority markets in Europe. In addition, to the extent reimbursement for our product is subject to outcomes-based arrangements, the total payments received from product sales may vary, our cash collection of future payments and revenue assumptions from product sales will be at risk, and the timing of revenue recognition may not correspond to the timing of cash collection. We plan on commercializing our product candidates in the United States

once approved, and will be subject to price reporting obligations set forth by CMS. To the extent reimbursement for our potential products in the United States by U.S. governmental payers is subject to outcomes-based arrangements, the increased complexity increases the risk that CMS may disagree with the assumptions and judgments that we use in our price reporting calculations, which may result in significant fines and liability.

Collectively, these factors could affect our ability to successfully commercialize our potential products and generate or recognize revenues, which would adversely impact our business, financial condition, results of operations and prospects.

Risks related to the research and development of our product candidates

We cannot predict when or if we will obtain marketing approval to commercialize beti-cel, eli-cel, or LentiGlobin for SCD, and the marketing approval of our product candidates may ultimately be for more narrow indications than we expect. If our product candidates are not approved in a timely manner or at all for any reason, our business prospects, results of operations, and financial condition would be adversely affected.

Before obtaining marketing approval from regulatory authorities for the commercialization of our product candidates, we must conduct extensive clinical studies to demonstrate the safety, purity and potency, and efficacy, of the product candidates in humans. Clinical testing is expensive, time-consuming and uncertain as to outcome. 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. 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;
- 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;
- 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 patient enrollment, or in having patients complete participation in a study or return for post-treatment follow-up;
- 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.

We have experienced delays in some of our clinical studies in the past, and we may experience similar delays in the future.

Results from previous or ongoing studies are not necessarily predictive of our future clinical study results, and initial or interim results may not continue or be confirmed upon completion of the study. There is limited data concerning long-term safety and efficacy following treatment with our gene therapy and T cell-based product candidates. These data, or other positive data, may not continue or occur for these patients or for any future patients in our ongoing or future clinical studies, and may not be repeated or observed in ongoing or future studies involving our product candidates. Furthermore, 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 can be no assurance that any of these studies will ultimately be successful or support further clinical advancement or marketing approval of our product candidates. For instance, while patients with SCD who have been treated with LentiGlobin may experience a reduction of vaso-occlusive events following successful engraftment, there can be no assurance that they will not experience vaso-occlusive events in the future. We have experienced unexpected results in the past, and we may experience unexpected results in the future.

Even if our product candidates demonstrate safety and efficacy in clinical studies, regulatory delays or rejections may be encountered as a result of many factors, including changes in regulatory policy during the period of product development. We may experience delays or rejections based upon additional government regulation from future legislation or administrative action, changes in regulatory agency policy, or additional regulatory feedback or guidance during the period of product development, clinical studies and the review process. The field of cell and gene therapy is evolving, and as more products are reviewed by regulatory authorities, they may impose additional requirements that were not previously anticipated. 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 marketing approval for the desired age ranges, our business may suffer.

In general, the FDA requires the successful completion of two pivotal trials to support approval of a biologics licensing application, or BLA, but in certain circumstances, will approve a BLA based on only one pivotal trial. Because beti-cel has been granted the FDA's Fast Track and Breakthrough Therapy designations, we are engaged in discussions with the FDA regarding the development plans for beti-cel to enable a submission of a BLA prior to the completion of our ongoing studies. Based on these discussions, we believe the results from our ongoing Northstar-2 and Northstar-3 clinical studies, together with data from our Northstar study, the LTF-303 long-term follow up protocol, and completed HGB-205 study, could be sufficient to form the basis for a BLA submission for beti-cel to treat patients with β-thalassemia who require regular blood cell transfusions. However, it should be noted that our ability to 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 approval of a BLA. Depending on the outcome of these ongoing clinical studies, the FDA may require that we conduct additional or larger pivotal trials before we can obtain approval of a BLA for beti-cel for the treatment of patients with TDT. Furthermore, we are required to submit data relating to certain release assays designed to confirm the quality, purity and strength (including potency) of beti-cel as a condition for filing the BLA, which has the potential for further delaying the the filing of our BLA, with the potential consequence of delaying any approval and commercial launch of beti-cel in the United States.

Based on our discussions with the FDA, we believe that we may be able to seek approval for eli-cel for the treatment of patients with CALD in the United States on the basis of safety and efficacy data from our ongoing Starbeam study, safety data from our ongoing ALD-104 study, and the completed ALD-103 observational study. Whether eli-cel is eligible for approval will ultimately be determined at the discretion of the FDA, 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 approval. Depending on the outcome of our ongoing studies, and pending the resolution of the clinical hold on our eli-cel clinical studies, the FDA may require that we conduct additional or larger clinical trials before eli-cel is eligible for approval.

Based on our discussions with the FDA, we believe that we may be able to seek accelerated approval for our LentiGlobin for SCD product candidate in the United States on the basis of clinical data from Group C of our ongoing HGB-206 clinical study, with our ongoing HGB-210 clinical study providing confirmatory data for full approval. We cannot be certain that data from our HGB-206 or HGB-210 clinical studies will be sufficiently robust from a safety and/or efficacy perspective to support either accelerated approval or full approval. Our development plan in the United States is contingent upon LentiGlobin for SCD demonstrating complete resolution of severe vaso-occlusive events, with globin response as a key secondary endpoint, and an acceptable safety profile in the study participants. Depending on the outcome of our ongoing and planned studies, the FDA may require that we conduct additional or larger clinical trials before our LentiGlobin product candidate is eligible for approval for the treatment of patients with SCD. In our discussions with FDA regarding the transition of manufacturing to the commercial setting from the clinical context, we are finalizing our plans for validating our commercial manufacturing processes and for providing the FDA with the comparability data that it requires. The FDA may not agree with these plans, or may require additional validation or comparability data as a condition for completing the BLA submission and filing. In addition, in light of reported safety events in our HGB-206 clinical study, the conduct of our clinical studies of LentiGlobin for SCD was interrupted in 2021 as we worked with the FDA to lift the clinical hold on our studies. Taken together, these factors are likely to result in delays in our ability to submit a BLA for regulatory approval of LentiGlobin for SCD.

If our product candidates are ultimately not approved for any reason, our business, prospects, results of operations and financial condition would be adversely affected.

Changes in our manufacturing processes may cause delays in our clinical development and commercialization plans.

The manufacturing processes for our lentiviral vectors and our drug products are complex. We explore improvements to our manufacturing processes on a continual basis, as we evaluate clinical and manufacturing data and based on discussions with regulatory authorities. In some circumstances, changes in the manufacturing process may require us to perform additional comparability studies, collect additional data from patients, submit additional regulatory filings, or comply with additional requirements, which may lead to delays in our clinical development and commercialization plans. For instance, following the conditional approval of beti-cel by the European Commission, we continued to refine our commercial drug product manufacturing process to narrow some of the manufacturing process parameters and to tighten the range of commercial drug product release specifications, based on discussions with the European Medicines Agency and evolving clinical data. Implementing these changes to the beti-cel commercial manufacturing process had the effect of delaying our ability to treat the first patient in the commercial context in Europe. In LentiGlobin for SCD, we plan to seek regulatory approval for drug product utilizing lentiviral vector manufactured using the scalable suspension manufacturing process, rather than the adherent manufacturing process. The FDA may not agree with our proposed plans for demonstrating the comparability of the two

processes, and may require us to conduct additional studies, collect additional data, develop additional assays, or modify release specifications, which may delay our ability to submit a BLA for regulatory approval of LentiGlobin for SCD. Over time, we also intend to transition the lentiviral vector manufacturing process for beti-cel in the United States to the suspension manufacturing process, and the timing in which we are able to make the transition will be dependent upon reaching agreement with the FDA, which may require us to conduct additional studies, collect additional data, develop additional assays, or modify release specifications.

We face intense competition and rapid technological change and the possibility that our competitors may develop therapies that are more advanced, safer or effective than ours, which may adversely affect our financial condition and our ability to successfully develop and commercialize beti-cel, eli-cel, and LentiGlobin for SCD. If our competitors obtain orphan drug exclusivity for products that regulatory authorities determine constitute the same drug and treat the same indications as our product candidates, we may not be able to have competing products approved by the applicable regulatory authority for a significant period of time.

We are engaged in the development of gene therapies for severe genetic diseases, which is a competitive and rapidly-changing field. We have competitors both in the United States and internationally, including major multinational pharmaceutical companies, biotechnology companies and universities and other research institutions. Many of our competitors have substantially greater financial, technical and other resources, such as larger research and development staff, more experienced manufacturing capabilities, or more established commercial infrastructure. 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, safer, or less costly than any products that we may develop, or achieve patent protection, marketing approval, product commercialization and market penetration earlier than us. Additionally, technologies developed by our competitors may render our potential products uneconomical or obsolete, and we may not be successful in marketing our product candidates against competitors. For additional information regarding our competition, see “Item 1. Business—Competition” in our Annual Report on Form 10-K.

Even if we are successful in achieving marketing 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 potential products. If competitors are able to obtain marketing approval for biosimilars referencing our potential products, our potential 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 beti-cel, eli-cel, and LentiGlobin for SCD have been granted orphan drug status by the FDA 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. Generally, if a product with an orphan drug designation receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the FDA from approving another marketing application for a product that constitutes the same drug treating the same indication for that marketing exclusivity period, except in limited circumstances. If another sponsor receives such approval before we do (regardless of our orphan drug designation), we will be precluded from receiving marketing approval for our potential products for the exclusivity period for the applicable indication.

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.

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 platform technologies. Our research programs in severe genetic diseases may fail to identify other potential product candidates for clinical development for a number of reasons. We 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. 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. If any of these events occur, we may be forced to abandon our research, development or commercialization efforts for a program or programs, which would have a material adverse effect on our business and could potentially cause us to cease operations.

Insertional oncogenesis is a risk of gene therapies using viral vectors that can integrate into the genome, and a patient with CALD treated with eli-cel in one of our clinical studies has been diagnosed with myelodysplastic syndrome likely mediated by Lenti-D lentiviral vector insertion. These events may require us to halt or delay further clinical development of our product candidates, such as eli-cel, or to suspend or cease commercialization following marketing approval, and the commercial potential of our product candidates may be materially and negatively impacted.

A potentially significant risk in any gene therapy product using viral vectors that can integrate into the genome is that the vector will insert in or near cancer-causing genes, leading to the proliferation of certain cellular clones that can cause cancer in the patient, known as insertional oncogenesis. Clonal predominance and vector insertion into or near genes associated with cancer in the general population has been detected in some patients treated with eli-cel. In August 2021, two patients have been diagnosed with myelodysplastic syndrome (MDS) likely mediated by Lenti-D lentiviral vector insertion. The FDA has placed our clinical studies of eli-cel on clinical hold, and we have no assurance as to what the FDA may require for lifting the clinical hold, the timing of when the clinical hold may be lifted, and whether the timeline of the BLA filing for eli-cel may be delayed. It is possible that the FDA may also place a clinical hold on our clinical studies for beti-cel and LentiGlobin for SCD, or may require additional information, testing, or monitoring that results in delays to the regulatory timelines for these programs. In addition, we cannot make assurances that additional patients treated with eli-cel, beti-cel or LentiGlobin for SCD in the clinical or commercial setting will not exhibit clonal predominance in the future, that additional patients will not be diagnosed with MDS, or that the patient diagnosed with MDS or any other patient will not develop leukemia or lymphoma. It is possible that upon occurrence of any of these events, FDA may place one or more of our programs on hold, impose requirements that result in delays for regulatory approval for one or more of our programs, or may cause us to cease commercialization following the receipt of any marketing approval. If any of these were to occur, the commercial potential of our programs may be materially and negatively impacted.

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, and we may be unable to commercialize any such approved product. Furthermore, treatment with our potential products involve chemotherapy or myeloablative treatments which can cause side effects or adverse events that may impact the perception of the potential benefits of our potential products. For instance, myelodysplastic syndrome leading to acute myeloid leukemia is a known risk of certain myeloablative regimens. Additionally, beti-cel, eli-cel, or LentiGlobin for SCD, the procedures associated with their administration, or with the collection of patients' cells, could potentially cause other adverse events that have not yet been predicted. The inclusion of patients with significant underlying medical problems 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, or the progression of their disease.

For instance, it is possible that the events of myelodysplastic syndrome and acute myeloid leukemia previously reported in our HGB-206 clinical study were caused by the LentiGlobin for SCD drug product, in combination with underlying sickle cell disease, transplant procedure, and stress on the bone marrow following drug product infusion. Even if a product such as LentiGlobin for SCD, eli-cel or beti-cel is ultimately approved, such safety events may result in the product being removed from the market or its market opportunity being significantly reduced. Other patients receiving our product candidates may develop leukemia, lymphoma, or myelodysplastic syndrome in the future, which may negatively impact the commercial prospects of our product candidates. Any of these events could impair our ability to develop or commercialize our product candidates, and their commercial potential may be materially and negatively impacted.

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

Public perception may be influenced by claims that gene therapy, including gene editing technologies, is unsafe or unethical, and research activities and adverse events in the field, even if not ultimately attributable to us or our product candidates, could result in increased governmental regulation, unfavorable public perception, challenges in recruiting patients to participate in our clinical studies, potential regulatory delays in the testing or approval of our potential products, stricter labeling requirements for those product candidates that are approved, and a decrease in demand for any such product. 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 approved products.

Risks related to our reliance on third parties

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

We do not independently conduct all aspects of our lentiviral vector production, drug product manufacturing, and testing. We currently rely, and expect to continue to rely, on third parties with respect to these items, including manufacturing and testing in the commercial context.

Our reliance on these third parties for manufacturing, testing, research and development activities 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 products 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, and that our lentiviral vectors and drug products are manufactured in accordance with GMP as applied in the relevant jurisdictions.

If these third parties do not successfully carry out their contractual duties, meet expected deadlines, conduct our studies in accordance with regulatory requirements or our stated study plans and protocols, or manufacture our lentiviral vectors and drug products in accordance with GMP, whether due to the impacts of COVID-19 or otherwise, we will not be able to complete, or may be delayed in completing, the preclinical and clinical studies and manufacturing process validation activities required to support future IND and BLA submissions and approval of our product candidates, or to support commercialization of our products, if approved. Many of our agreements with these third parties contain termination provisions that allow these third parties to terminate their relationships with us at any time. If we need to enter into alternative arrangements, our product development and commercialization activities could be delayed.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured the products 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.

We may be forced to manufacture lentiviral vector and drug product ourselves, for which we may not have the capabilities or resources, or enter into an agreement with a different manufacturer, which we may not be able to do on reasonable terms, if at all. In some cases, the technical skills required to manufacture our lentiviral vector or drug product candidates may be unique or proprietary to the original manufacturer, and we may have difficulty or there may be contractual restrictions prohibiting us from, transferring such skills to a back-up or alternate supplier, or we may be unable to transfer such skills at all. Any of these events could lead to clinical study delays or failure to obtain marketing approval, or impact our ability to successfully commercialize our potential 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 product candidates. The manufacturing facilities on which we rely may not continue to meet regulatory requirements and have limited capacity.

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 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 marketing 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 marketing approval of our potential products. In addition, the regulatory authorities may, at any time, audit or inspect a manufacturing facility involved with the preparation of our 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 marketing 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 potential products, cause us to incur higher costs and prevent us from commercializing our potential 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 revenues.

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 and other regulatory authorities' 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. 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 and other regulatory authorities may require us to perform additional clinical studies before approving any marketing applications.

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 marketing 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.

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 drug products, 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 have incurred net losses in each year since our inception in 1992, including net losses of $664.3 million for the nine months ended September 30, 2021. As of September 30, 2021, we had an accumulated deficit of $3.56 billion. The amount of our future net losses will depend, in part, on the rate of our future expenditures and our ability to generate revenues. We have devoted significant financial resources to research and development, including our clinical and preclinical development activities, which we expect to continue for the foreseeable future. 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. We have not generated material revenues from the sale of beti-cel in the European Union, and we do not expect to generate meaningful product revenues in the foreseeable future until we obtain marketing approval for products in the United States. Following marketing approval, our future revenues will depend upon the size of any markets in which our potential products have received approval, and our ability to achieve sufficient market acceptance, reimbursement from third-party payers and adequate market share for our potential products 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;
- establish capabilities to support our commercialization efforts, including establishing a sales, marketing and distribution infrastructure in the United States, and to commercialize products for which we may obtain marketing approval;
- obtain, build and expand manufacturing capacity, including capacity at third-party manufacturers;
- initiate additional research, preclinical, clinical or other programs as we seek to identify and validate additional product candidates;
- acquire or in-license other product candidates and technologies;
- maintain, protect and expand our intellectual property portfolio;
- attract and retain skilled personnel; 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 not generated material revenue from product sales and may never be profitable.

Our ability to generate revenues 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 beti-cel, eli-cel, or LentiGlobin for SCD. Our ability to generate 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 drug products;
- 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 for our product candidates and commercial demand for any approved product;
- launching and commercializing any approved product, either by collaborating with a partner or, if launched independently, by establishing a field-based team, marketing and distribution infrastructure;
- obtaining sufficient pricing and reimbursement for any approved product from private and governmental payers;
- obtaining market acceptance and adoption of any approved product and gene therapy as a viable treatment option;
- addressing any competing technological and market developments;
- 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.

We expect to continue to incur significant expenditures for the foreseeable future, and we expect these expenditures to increase, which costs may increase further as competitors enter the market. Our expenses could increase beyond expectations if we are required by the FDA 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 material product revenues, 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 late-stage programs in severe genetic diseases through clinical development. Developing and commercializing gene therapy products is expensive, and we expect our research and development expenses and our commercialization expenses to increase substantially in connection with our ongoing activities, particularly as we advance our product candidates and progress our commercialization readiness efforts in the United States. We do not expect to recognize material revenue from commercial sales of beti-cel or eli-cel in Europe prior to our planned wind down of our European operations.

As of September 30, 2021, our cash, cash equivalents and marketable securities were $970.7 million. As of completion of the separation, we had restricted cash, cash and cash equivalents, and marketable securities of approximately $518.5 million. Based on our current business plan, we expect our cash, cash equivalents and marketable securities will be sufficient to fund planned operations for at least the next twelve months from the date of issuance of these financial statements. Our current business plan assumes continued rigorous prioritization and focus on our expenses, real estate optimization, and exploration of additional sources of funding, including through public or private equity or debt financings, to further strengthen our financial position. However, our operating plan may change further as a result of the COVID-19 pandemic and the surrounding economic conditions, as well as many other factors currently unknown to us. In addition, we may seek additional funds through government or other third-party funding, marketing and distribution arrangements or other collaborations, strategic alliances and licensing arrangements or a combination of these approaches, during this period. In any event, we will require additional

capital to obtain marketing 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.

Our fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our potential products following marketing approval if and when obtained. In addition, we cannot guarantee that 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, or if revenues from collaboration arrangements or product sales are less than we have projected, we may be required to further revise our business plan and strategy, which may result in us significantly curtailing, delaying or discontinuing one or more of our research or development programs or the commercialization of any product candidates or may result in our being unable to expand our operations or otherwise capitalize on our business opportunities, beyond our current plans. As a result, our business, financial condition and results of operations could be materially affected.

If the estimates we make, or the assumptions on which we rely, in preparing our consolidated financial statements are incorrect, our actual results may vary from those reflected in our projections and accruals.

Our consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America, or GAAP. The preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of our assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. We cannot assure you, however, that our estimates, or the assumptions underlying them, will be correct. We may be incorrect in our assumptions regarding the applicability of drug pricing programs and rebates that may be applicable to our potential products, which may result in our under- or over-estimating our anticipated product revenues especially as applicable laws and regulations governing pricing evolve over time. In addition, to the extent payment for our potential products is subject to outcomes-based arrangements over time, the total payments received from product sales may vary, our cash collection of future payments and revenue assumptions from product sales will be at risk, and the timing of revenue recognition may not correspond to the timing of cash collection.

Further, from time to time we issue financial guidance relating to our expectations for our cash, cash equivalents, and marketable securities available for operations, which guidance is based on estimates and the judgment of management. If, for any reason, our expenses differ materially from our guidance or we utilize our cash more quickly than anticipated, we may have to adjust our publicly announced financial guidance. If we fail to meet, or if we are required to change or update any element of, our publicly disclosed financial guidance or other expectations about our business, our stock price could decline.

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

Our operating results are difficult to predict and will likely fluctuate from quarter to quarter and year to year. We expect that following marketing approval, if and when obtained, revenues from product sales will be difficult to predict from period to period, given the absence of historical sales data for beti-cel, eli-cel and LentiGlobin for SCD.

Further, changes in our operations, such as increased development, manufacturing and clinical trial expenses in connection with expanding our pipeline programs, or our undertaking of additional programs, or business activities, or entry into strategic transactions, including potential future acquisitions of products, technologies or businesses may also cause significant fluctuations in our expenses.

The cumulative effects of these factors, further exacerbated by the impacts of the ongoing COVID-19 pandemic on healthcare systems and economic conditions, will likely result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance. This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period. If our

revenue or operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue or earnings guidance we may provide.

Risks related to our business operations

Even if we receive marketing approval for a product candidate, any approved product will remain subject to regulatory scrutiny.

Even if we obtain marketing approval in a jurisdiction, regulatory authorities may still impose significant restrictions on the indicated uses or marketing of any approved products, or impose ongoing requirements for potentially costly post-approval studies, post-market surveillance or patient or drug restrictions. 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. We have experienced interruptions in our marketing of beti-cel in Europe due to safety concerns arising from our LentiGlobin for SCD program, and we can make no assurance that we will not experience interruptions in any marketing or other commercialization activities in the future, whether due to safety concerns in any approved products, or due to events arising from programs that utilize technologies similar to or related to ours.

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 marketing approval for a product, 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 marketing 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 any approved product and generate revenues.

We are subject, directly or indirectly, to federal and state healthcare fraud and abuse laws, false claims laws and health information privacy and security laws. If we are unable to comply, or have not fully complied, with such laws, we could face substantial penalties, reputational harm, and diminished profits and future earnings.

In the United States, the research, manufacturing, distribution, sale, and promotion of drugs and biologic products are subject to regulation by various federal, state, and local authorities in addition to FDA, including CMS, other divisions of the HHS, (e.g., the Office of Inspector General), the United States Department of Justice offices of the United States Attorney, the Federal Trade Commission and state and local governments. Our operations are directly, or indirectly through our prescribers, customers and purchasers, subject to various federal and state fraud and abuse laws and regulations described in more detail under *"Item 1. Business--Government regulation"* in our Annual Report. These include the federal Anti-Kickback Statute, federal civil and criminal false claims laws and civil monetary penalty laws (including False Claims Laws), HIPAA, transparency requirements created under the Affordable Care Act, as well as analogous state and foreign laws.

These laws apply to, among other things, our sales, marketing and educational programs. State and federal regulatory and enforcement agencies continue actively to investigate violations of health care laws and regulations, and the United States Congress continues to strengthen the arsenal of enforcement tools. Most recently, the Bipartisan Budget Act of 2018 increased the criminal and civil penalties that can be imposed for violating certain federal health care laws, including the Anti-Kickback Statute. Enforcement agencies also continue to pursue novel theories of liability under these laws. In particular, government agencies have recently increased regulatory scrutiny and enforcement activity with respect to programs supported or sponsored by pharmaceutical companies, including reimbursement and co-pay support, funding of independent charitable foundations and other programs that offer benefits for patients. Several investigations into these programs have resulted in significant civil and criminal settlements.

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge under one or more of such laws. If our operations are found to be in violation of any of the laws described above or any other government regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from participation in government health care programs, such as Medicare and Medicaid, imprisonment and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Even if we are not determined to have violated these laws, government investigations into these issues typically require the expenditure of significant resources and generate negative publicity, which could harm our financial condition and divert the attention of our management from operating our business.

In addition, we may be subject to patient privacy laws by both the federal government and the states in which we conduct our business. For example, HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their respective implementing regulations, imposes requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates that perform services for them that involve the use, or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions In addition to HIPAA, as amended by HITECH, and their respective implementing regulations, California recently enacted the California Consumer Privacy Act, or CCPA, which creates new individual privacy rights for California consumers (as defined in the law) and places increased privacy and security obligations on entities handling personal data of consumers or households. The CCPA requires covered companies to provide certain disclosures to consumers about its data collection, use and sharing practices, and to provide affected California residents with ways to opt-out of certain sales or transfers of personal information. While there is currently an exception for protected health information that is subject to HIPAA, as currently written, the CCPA may impact our business activities. The California Attorney General has proposed draft regulations, which have not been finalized to date, that may further impact our business activities if they are adopted. The uncertainty surrounding the implementation of CCPA exemplifies the vulnerability of our business to the evolving regulatory environment related to personal data and protected health information.

In the European Union, interactions between pharmaceutical companies, healthcare professionals, and patients are also governed by strict laws, regulations, industry self-regulation codes of conduct and physicians' codes of professional conduct in the individual EU member states. The provision of benefits or advantages to healthcare professionals to induce or encourage the prescription, recommendation, endorsement, purchase, supply, order or use of medicinal products is prohibited in the European Union. Also, direct-to-consumer advertising of prescription-only medicinal products is prohibited at the European Union level and in the individual member states. In addition, the UK Bribery Act applies to any company incorporated in or "carrying on business" in the UK, irrespective of where in the world the alleged bribery activity occurs, which could have implications for our interactions with physicians both in and outside of the UK. Infringement of these laws could result in substantial fines and imprisonment.

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

EU member states, Switzerland and other countries have also adopted data protection laws and regulations, which impose significant compliance obligations. In the European Union, the collection and use of personal health data is currently governed by the provisions of the General Data Protection Regulation, or the GDPR. The GDPR, together with the national legislation of the individual EU member states governing the processing of personal data, impose strict obligations and restrictions on the ability to collect, analyze and transfer personal data, including health data from clinical trials and adverse event reporting. In

particular, these obligations and restrictions concern the consent of the individuals to whom the personal data relates, the information provided to the individuals for the consent to be considered valid, the transfer of personal data out of the European Economic Area, security breach notifications, the use of third-party processors in connection with the processing of the personal data, confidentiality of the personal data, as well as substantial potential fines for breaches of the data protection obligations. Data protection authorities from the different EU member states may interpret the GDPR and national laws differently and impose additional requirements, which add to the complexity of processing personal data in the European Union. The GDPR also imposes strict rules on the transfer of personal data to countries outside the European Union, including the United States, and permits data protection authorities to impose large penalties for violations of the GDPR, including potential fines of up to €20 million or 4% of annual global revenues, whichever is greater. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. Compliance with the GDPR is a rigorous and time-intensive process that may increase our cost of doing business or require us to change our business practices, and despite those efforts, there is a risk that we may be subject to fines and penalties, litigation, and reputational harm in connection with any activities falling within the scope of the GDPR. Further, Brexit has created uncertainty with regard to data protection regulation in the United Kingdom. In particular, it is unclear how data transfers to and from the United Kingdom will be regulated.

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 marketing 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 patients participating in clinical trials, consumers, healthcare providers, pharmaceutical companies or others selling or otherwise coming into contact with our product candidates. 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 develop our product candidates or commercialize any approved product; and
- decreased demand for any approved product.

We carry product liability insurance and we believe our product liability insurance coverage is sufficient in light of our current clinical programs and approved product; however, we may not be able to maintain insurance coverage at commercially reasonable cost or in sufficient amounts to protect us against losses due to liability. 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 marketing approval for any approved product, 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 product candidates the investigation into the circumstance may be time-consuming or inconclusive. These investigations may interrupt our sales efforts, delay our marketing approval process in other countries, or impact and limit the type of marketing approval our product candidates may receive or any approved product maintains. 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.

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

The United States and many foreign jurisdictions have enacted or proposed legislative and regulatory changes affecting the healthcare system that could prevent or delay marketing approval of our potential products, restrict or regulate post-approval activities and affect our ability to profitably sell any product for which we obtain marketing approval. Changes in regulations, statutes or the interpretation of existing regulations could impact our business in the future by requiring, for example: (i) changes to our manufacturing arrangements; (ii) additions or modifications to product labeling; (iii) the recall or discontinuation of our products; or (iv) additional record-keeping requirements. If any such changes were to be imposed, they could adversely affect the operation of our business.

In the United States, there have been and continue to be a number of legislative initiatives to contain healthcare costs. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or the Affordable Care Act, was passed, which substantially changed the way health care is financed by both governmental and private insurers, and significantly impacts the U.S. pharmaceutical industry. The Affordable Care Act, among other things, addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, increased the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and extended the rebate program to individuals enrolled in Medicaid managed care organizations, established annual fees and taxes on manufacturers of certain branded prescription drugs, expanded the types of entities eligible for the 340B drug discount program, and a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 70% (increased pursuant to the Bipartisan Budget Act of 2018, effective as of 2019) point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D.

Since its enactment, there have been numerous judicial, administrative, executive, and legislative challenges to certain aspects of the Affordable Care Act, and we expect there will be additional challenges and amendments to the Affordable Care Act in the future. Various portions of the Affordable Care Act are currently undergoing legal and constitutional challenges in the Fifth Circuit Court and the United States Supreme Court. It is unclear whether the Affordable Care Act will be overturned, repealed, replaced, or further amended. We cannot predict what effect further changes to the Affordable Care Act would have on our business.

In addition, other legislative changes have been proposed and adopted since the Affordable Care Act was enacted. In August 2011, President Obama signed into law the Budget Control Act of 2011, which, among other things, created the Joint Select Committee on Deficit Reduction to recommend to Congress proposals in spending reductions. The Joint Select Committee on Deficit Reduction did not achieve a targeted deficit reduction, which triggered the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of, on average, 2% per fiscal year through 2025 unless Congress takes additional action. These reductions were extended through 2029 through subsequent legislative amendments. In January 2013, the American Taxpayer Relief Act of 2012, among other things, further reduced Medicare payments to several providers, including hospitals and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

There has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. Congressional inquiries and proposed federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under Medicare, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. At the federal level, the Trump administration's budget proposal for fiscal years 2019 and 2020 contain further drug price control measures that could be enacted during the budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing.

We expect that the healthcare reform measures that have been adopted and may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved product and could seriously harm our future revenues. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private third-party payers.

The delivery of healthcare in the European Union, including the establishment and operation of health services and the pricing and reimbursement of medicines, is almost exclusively a matter for national, rather than EU, law and policy. National governments and health service providers have different priorities and approaches to the delivery of health care and the pricing

and reimbursement of products in that context. In general, however, the healthcare budgetary constraints in most EU member states have resulted in restrictions on the pricing and reimbursement of medicines by relevant health service providers. Coupled with ever-increasing EU and national regulatory burdens on those wishing to develop and market products, this could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to commercialize any products for which we obtain marketing approval.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our potential products. Such reforms could have an adverse effect on anticipated revenue from product candidates that we may successfully develop and for which we may obtain marketing approval and may affect our overall financial condition and ability to develop product candidates.

Our computer systems, or those of our third-party collaborators, service providers, contractors or consultants, may fail or suffer security breaches, which could result in a material disruption of our product candidates' development programs and have a material adverse effect on our reputation, business, financial condition or results of operations.

Our computer systems and those of our current or future third-party collaborators, service providers, contractors and consultants may fail and are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. The size and complexity of our information technology systems, and those of our collaborators, service providers, contractors and consultants, and the large amounts of information stored on those systems make those systems vulnerable to service interruptions, security breaches, or other failures, resulting from inadvertent or intentional actions by our employees or those of third-party business partners, or from cyber-attacks by malicious third parties. Attacks on information technology systems are increasing in their frequency, levels of persistence, sophistication and intensity, and they are being conducted by increasingly sophisticated and organized groups and individuals with a wide range of motives and expertise. In addition to extracting sensitive information, such attacks could include the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of information. The prevalent use of mobile devices also increases the risk of data security incidents. If we experience a material system failure, accident or security breach that causes interruptions in our operations or the operations of third-party collaborators, service providers, contractors and consultants, it could result in significant reputational, financial, legal, regulatory, business or operational harm. For example, the loss of clinical trial data for our product candidates could result in delays in our marketing approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach results in a loss of or damage to our data or applications or other data or applications relating to our technology or product candidates, or inappropriate disclosure of confidential or proprietary information, we could incur liabilities and the further development of our product candidates could be delayed. In addition, we rely on third-party service providers for management of the manufacture and delivery of drug product to patients in the commercial context, including for chain of identity and chain of custody. We also rely on third-party service providers for aspects of our internal control over financial reporting and such service providers may experience a material system failure or fail to carry out their obligations in other respects, which may impact our ability to produce accurate and timely financial statements, thus harming our operating results, our ability to operate our business, and our investors' view of us. In addition, our liability insurance may not be sufficient in type or amount to cover us against claims related to material failures, security breaches, cyberattacks and other related breaches.

Any failure or perceived failure by us or any third-party collaborators, service providers, contractors or consultants to comply with our privacy, confidentiality, data security or similar obligations to third parties, or any data security incidents or other security breaches that result in the unauthorized access, release or transfer of sensitive information, including personally identifiable information, may result in governmental investigations, enforcement actions, regulatory fines, litigation or public statements against us. These events could cause third parties to lose trust in us or could result in claims by third parties asserting that we have breached our privacy, confidentiality, data security or similar obligations, any of which could have a material adverse effect on our reputation, business, financial condition or results of operations. Moreover, data security incidents and other security breaches can be difficult to detect, and any delay in identifying them may lead to increased harm. While we have implemented data security measures intended to protect our information technology systems and infrastructure, there can be no assurance that such measures will successfully prevent service interruptions or data security incidents.

Risks related to the separation of our oncology programs and portfolio

We may incur operational difficulties or be exposed to claims and liabilities as a result of the separation of 2seventy bio.

On November 4, 2021, we distributed all of the outstanding shares of 2seventy bio, Inc., or 2seventy, common stock to our stockholders in connection with the separation of our oncology programs and portfolio. In connection with the distribution, we entered into a separation agreement and various other agreements (including a tax matters agreement, an employee matters

agreement, transition services agreements and an intellectual property license agreement). These agreements govern the separation and distribution and the relationship between the us and 2seventy going forward, including with respect to potential tax-related losses associated with the separation and distribution. They also provide for the performance of services by each company for the benefit of the other for a period of time.

The separation agreement provides for indemnification obligations designed to make 2seventy financially responsible for many liabilities that may exist relating to its business activities, whether incurred prior to or after the distribution, including any pending or future litigation, but we cannot guarantee that 2seventy will be able to satisfy its indemnification obligations. It is also possible that a court would disregard the allocation agreed to between us and 2seventy and require us to assume responsibility for obligations allocated to 2seventy. Third parties could also seek to hold us responsible for any of these liabilities or obligations, and the indemnity rights we have under the separation agreement may not be sufficient to fully cover all of these liabilities and obligations. Even if we are successful in obtaining indemnification, we may have to bear costs temporarily. In addition, our indemnity obligations to 2seventy, including those related to assets or liabilities allocated to us, may be significant. These risks could negatively affect our business, financial condition or results of operations.

The separation of 2seventy continues to involve a number of additional risks, including, among other things, the potential that management's and our employees' attention will be significantly diverted by the provision of transitional services or that we may incur other operational challenges or difficulties as a result of the separation. Certain of the agreements described above provide for the performance of services by each company for the benefit of the other for a period of time. If 2seventy is unable to satisfy its obligations under these agreements, we could incur losses and may not have sufficient resources available for such services. These arrangements could also lead to disputes over rights to certain shared property and over the allocation of costs and revenues for products and operations. Our inability to effectively manage the transition activities and related events could adversely affect our business, financial condition or results of operations.

We may fail to realize some or all of the anticipated benefits of the proposed separation.

The anticipated operational, financial, strategic and other benefits of the separation of 2seventy may not be achieved. The combined value of the common stock of the two publicly-traded companies may not be equal to or greater than what the value of our common stock would have been had the separation not occurred. The combined value of the common stock of the two companies could be lower than anticipated for a variety of reasons, including the failure of either company to operate and compete effectively as an independent company. The common stock price of each company may experience periods of extreme volatility. In addition, following the separation we are smaller and less diversified, with a narrower business focus, and may be more vulnerable to changing market conditions. The separation also presents a number of significant risks to our internal processes, including the failure to maintain an adequate control environment due to changes to our infrastructure technology systems and financial reporting processes.

The separation may impede our ability to attract and retain key personnel, which could materially harm our business

Following the separation, we will need to continue to attract and retain qualified key personnel in a highly competitive environment. Our ability to attract, recruit and retain such talent will depend on a number of factors, including the hiring practices of our competitors, the performance of our development and clinical programs, our compensation and benefits, work location and work environment and economic conditions affecting our industry generally. If we cannot effectively hire and retain qualified employees, our business, prospects, financial condition and results of operations could suffer.

Completion of the separation of 2seventy resulted in substantial changes in our board of directors and management.

Completion of the separation of 2seventy resulted in substantial changes in our board of directors and management. In particular, our former chief executive officer, Nick Leschly, resigned from that position (although Mr. Leschly continues to serve on our board of directors). In addition, Philip Gregory, our former chief scientific officer, and Chip Baird, our former chief financial officer, resigned from their positions with us to join management positions with 2seventy. Furthermore, Dan Lynch, Ramy Ibrahim, Denice Torres, William Sellers, Sarah Glickman and Marcela Maus resigned as members of our board of directors upon the completion of the separation. These senior officer and board level changes could be disruptive to our operations, present significant management challenges and could harm our business.

The separation may result in disruptions to, and harm our relationships with, our strategic business partners.

Uncertainty related to the separation may lead the suppliers, research organizations, and other parties with which we currently do business or may do business in the future to terminate or attempt to negotiate changes in our existing business relationships, or cause them to delay entering into business relationships with us or consider entering into business relationships with parties other than us. These disruptions could have a material and adverse effect on our business, prospects, financial condition and results of operations.

If the distribution of shares of 2seventy bio, together with certain related transactions, does not qualify as a transaction that is generally tax-free for U.S. federal income tax purposes, we and our stockholders could be subject to significant tax liabilities.

The completion of the distribution was conditioned upon, among other things, our receipt of a private letter ruling from the IRS, and an opinion from Goodwin Procter LLP, both satisfactory to our board of directors and both continuing to be valid, together confirming that the distribution, together with certain related transactions, generally is tax-free for U.S. federal income tax purposes under Sections 355 and 368(a)(1)(D) of the Code. We have received a favorable private letter ruling from the IRS addressing one significant issue of the qualification of the distribution under Section 355 of the Code. However, the private letter ruling does not address the remaining issues that are relevant to determining whether the distribution, together with certain related transactions, qualifies as a transaction that is generally tax-free for U.S. federal income tax purposes. The IRS private letter ruling and opinion of Goodwin Procter LLP were based, among other things, on various facts and assumptions, as well as certain representations, statements and undertakings from us and 2seventy bio (including those relating to the past and future conduct of us and 2seventy bio) and were subject to certain caveats. If any of these facts, assumptions, representations, statements or undertakings is, or becomes, inaccurate or incomplete, or if we or 2seventy bio breach any of our respective covenants relating to the separation, the IRS private letter ruling and tax opinion may be invalid. Moreover, the opinion is not binding on the IRS or any courts. Accordingly, notwithstanding receipt of the IRS private letter ruling and an opinion of Goodwin Procter LLP, the IRS could determine that the distribution and certain related transactions should be treated as taxable transactions for U.S. federal income tax purposes.

If the distribution, together with certain related transactions, were to fail to qualify as a transaction that is generally tax-free under Sections 355 and 368(a)(1)(D) of the Code, in general, for U.S. federal income tax purposes, we would recognize taxable gain as if we have sold 2seventy bio's distributed common stock in a taxable sale for its fair market value and our stockholders who receive shares of 2seventy bio common stock in the distribution would be subject to tax as if they had received a taxable distribution equal to the fair market value of such shares.

In connection with the distribution, we and 2seventy bio entered into a tax matters agreement pursuant to which each party is responsible for certain liabilities and obligations following the distribution. In general, under the terms of the tax matters agreement, if the distribution, together with certain related transactions, were to fail to qualify as a transaction that is generally tax-free for U.S. federal income tax purposes under Sections 355 and 368(a)(1)(D) of the Code, and if and to the extent that such failure results from a prohibited change of control in us under Section 355(e) of the Code, or an acquisition of our stock or assets or certain actions, omissions or failures to act, by us, then we will bear any resulting taxes, interest, penalties and other costs. If and to the extent that such failure results from a prohibited change of control in 2seventy bio under Section 355(e) of the Code or an acquisition of 2seventy bio stock or assets or certain actions by 2seventy bio, then 2seventy bio will be obligated to indemnify us for any resulting taxes, interest, penalties and other costs, including any reductions in our net operating loss carryforwards or other tax assets. If such failure does not result from a prohibited change of control in bluebird bio or 2seventy bio under Section 355(e) of the Code and both we and 2seventy bio are responsible for such failure, liability will be shared according to relative fault. If neither we nor 2seventy bio is responsible for such failure, we will bear any resulting taxes, interest, penalties and other costs.

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, and 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, *ex part*e reexaminations, post-grant review, and *inter partes* review 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 product candidates and commercialize our potential products. 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 clinical 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 the development of our product candidates or allow commercialization of our potential products, 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, approved product, 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 approved product or 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. 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 patent eligible subject matter, 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 potential products. Such a loss of patent protection would have a material adverse impact on our business.

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.

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 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.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our potential 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 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 potential 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 biotechnology and pharmaceutical 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 has been volatile in the past, and may continue to be volatile for the foreseeable future. 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 our product candidates or other gene therapy products, or in 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 regulatory authority's review of that IND or BLA;
- failure to successfully manage the commercial launch of beti-cel, eli-cel, or LentiGlobin for SCD following marketing approval, if and when obtained, including failure to manage our supply chain operations in the coordination and delivery of drug product to patients at qualified treatment centers;
- failure to obtain sufficient pricing and reimbursement for beti-cel, eli-cel, or LentiGlobin for SCD from private and governmental payers following marketing approval, if and when obtained;
- failure to obtain market acceptance and adoption of beti-cel, eli-cel, or LentiGlobin for SCD following marketing approval, if and when obtained;
- developments concerning the separation of our programs into two independent, publicly-traded companies;
- 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 beti-cel, eli-cel, or LentiGlobin for SCD, 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;
- the effects of the separation of 2seventy bio;
- 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 and members of our board of directors, 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, 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 make equity grants to certain new employees joining the company pursuant to an inducement plan, and our compensation committee may elect to increase the number of shares available for future grant without stockholder approval. We also have an Employee Stock Purchase Plan and any shares of common stock purchased pursuant to that plan will also cause dilution.

****We are subject to securities class action litigation, which may result in substantial costs and a diversion of management's attention and resources, which could harm our business.***

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities, and we are litigating class action complaints in the United States District Court for the District of Massachusetts and for the District of Delaware, filed by purported stockholders against us and certain of our directors and officers. We may face additional securities class action litigation in the future. This risk is especially relevant for us because biotechnology and pharmaceutical companies have experienced significant stock price volatility in recent years, and we expect to experience continued stock price volatility. Defending against the current litigation and any future litigation 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 and prior to our initial public offering in 2013, which we believe have resulted in a change in control as defined by IRC Section 382. We completed a study through September 2019 confirming no ownership changes have occurred since our initial public offering in 2013. 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 cash 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.

Changes in tax law could adversely affect our business and financial condition.

The rules dealing with U.S. federal, state, and local income taxation are constantly under review by persons involved in the legislative process and by the IRS and the U.S. Treasury Department. Changes to tax laws (which changes may have retroactive application) could adversely affect us or holders of our common stock. In recent years, many such changes have been made and changes are likely to continue to occur in the future. For example, on March 27, 2020, President Trump signed into law the "Coronavirus Aid, Relief, and Economic Security Act" or the CARES Act, which included certain changes in tax law intended to stimulate the U.S. economy in light of the COVID-19 pandemic, including temporary beneficial changes to the treatment of net operating losses, interest deductibility limitations and payroll tax matters. On December 27, 2020, President Trump signed into law the "Consolidated Appropriations Act", which included additional stimulus relief for the COVID-19 pandemic in the form of modifications to the refundable employee retention credit under the CARES Act and credit extenders, and spending bill for the 2021 fiscal year. On March 11, 2021, President Biden signed into law the "American Rescue Plan Act" ("ARPA"), which included extenders to the refundable employee retention credit under the CARES Act and limitations to executive compensation effective for tax years beginning after 2026. Future changes in tax laws could have a material adverse effect on our business, cash flow, financial condition or results of operations. We urge investors to consult with their legal and tax advisers regarding the implications of potential changes in tax laws on an investment in our common stock.

Item 2. Unregistered Sales of Equity Securities and Uses of Proceeds

None

Item 3. Defaults Upon Senior Securities

None

Item 4. Mine Safety Disclosures

None

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 none of our officers 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.

In November 2021, we entered into a lease agreement (the "Lease") with Assembly Row 5B, LLC ("Landlord") for office space located at 455 Grand Union Boulevard in Somerville, Massachusetts (the "Premises") to serve as our future headquarters. Under the terms of the Lease, we will lease approximately 61,180 square feet starting at an annual rate of $45 per square foot, subject to annual increases of 2.5%, plus operating expenses and taxes. In addition, we will be eligible for a tenant work allowance of $160 per rentable square foot of the premises. The Lease will commence on the earlier of (i) the date Landlord tenders possession of the Premises to us with any tenant work required to be performed by Landlord substantially completed; or (ii) the date Landlord allows us to take possession of the Premises and we take possession of the Premises prior to the substantial completion of tenant work by the Landlord. The Term Commencement Date is estimated to be March 18, 2022 ("Estimated Term Commencement Date"). The Lease shall terminate on the last day of the 129th month from the Term Commencement Date, unless earlier terminated or extended in accordance with the terms and conditions of the Lease. Rent payments shall commence three (3) months from the Term Commencement Date ("Rent Commencement Date").

The foregoing description of the terms of the Lease does not purport to be complete, and is qualified in its entirety by reference to the full text of the Lease, which is attached to this Form 10-Q as Exhibit 10.30.

Item 6. Exhibits

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

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	10-K	001-35966	3.2	February 23, 2021
4.1	Specimen Common Stock Certificate	S-1/A	333-188605	4.1	June 4, 2013
4.2	Form of Pre-Funded Warrant	8-K	001-35966	4.1	September 8, 2021
10.1#	Second Amended and Restated 2002 Employee, Director and Consultant Stock Plan, as amended, and forms of award agreement thereunder	S-1	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	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	333-188605	10.4	May 14, 2013
10.5†	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	333-188605	10.6	May 14, 2013
10.6†	Fourth Amendment to Patent License Agreement, dated October 28, 2016, by and between the Registrant and Massachusetts Institute of Technology	10-K	001-35966	10.7	February 22, 2017
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	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	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	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	333-188605	10.10	May 14, 2013
10.13††	License Agreement by and between the Registrant and Biogen Idec MA Inc., dated August 13, 2014	10-Q	001-35966	10.21	August 9, 2021
10.14†	Letter Agreement by and between the Registrant and Biogen MA Inc., dated September 29, 2017	10-Q	001-35966	10.21	November 1, 2017
10.15††	Exclusive Patent License Agreement by and between the Registrant and the National Institutes of Health, dated August 31, 2015	10-Q	001-35966	10.23	August 9, 2021
10.16†	License Agreement, dated December 23, 2015, by and between the Registrant and SIRION Biotech GmbH	10-K	001-35966	10.23	February 21, 2019
10.17††	Clinical and Commercial Supply Agreement – Viral Vector Product, dated November 27, 2017, by and between the Registrant and SAFC Carlsbad, Inc., as amended	10-Q	001-35966	10.25	August 1, 2019
10.18††	Amendment No. 2 to Clinical and Commercial Supply Agreement Viral Vector Product by and between bluebird bio (Switzerland) GmbH and SAFC Carlsbad, Inc.	8-K	001-35966	10.1	January 21, 2020

Exhibit Number	Exhibit Title	Incorporated by Reference			
		Form	File no.	Exhibit	Filing Date
10.19	Amendment No. 3 to Clinical and Commercial Supply Agreement Viral Vector Product by and between bluebird bio (Switzerland) GmbH and SAFC Carlsbad, Inc.	10-K	001-35966	10.28	February 23, 2021
10.20#	Employment Agreement, dated February 3, 2014, by and between the Registrant and Jason F. Cole	10-Q	001-35966	10.18	May 13, 2014
10.21#	Amendment to Employment Agreement, dated March 7, 2016, by and between the Registrant and Jason F. Cole	10-Q	001-35966	10.25	May 4, 2016
10.22#	Amendment No. 2 to Employment Agreement, dated November 3, 2016, by and between the Registrant and Jason F. Cole	10-K	001-35966	10.27	February 22, 2017
10.23#	2013 Employee Stock Purchase Plan	S-1/A	333-188605	10.17	June 4, 2013
10.24#	First Amendment of the Bluebird Bio, Inc. 2013 Employee Stock Purchase Plan	10-K	001-35966	10.38	February 21, 2018
10.25#	Second Amendment of the Bluebird Bio, Inc. 2013 Employee Stock Purchase Plan	S-8	333-257135	99.1	June 15, 2021
10.26#	2021 Inducement Plan and forms of award agreements thereunder	S-8	333-257135	99.2	June 15, 2021
10.27#	Executive Cash Incentive Bonus Plan	S-1	333-188605	10.18	May 14, 2013
10.28††	Sublease, dated April 16, 2019, by and between the Registrant and Aventis Inc.	10-Q	001-35966	10.42	August 1, 2019
10.29	Amendment to Sublease, dated April 19, 2019, by and between the Registrant and Aventis Inc.	10-Q	001-35966	10.43	August 1, 2019
10.30*	Office Lease Agreement, dated November 2, 2021, by and between the Registrant and Assembly Row 5B, LLC	—	—	—	Filed herewith
10.31††*	Securities Purchase Agreement, dated September 7, 2021, by and among the Registrant and the institutional investors named therein	8-K	001-35966	10.1	September 8, 2021
10.32	Registration Rights Agreement, dated September 7, 2021, by and among the Registrant and the persons listed on the attached Schedule A thereto	8-K	001-35966	10.2	September 8, 2021
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.	—	—	—	Furnished herewith
101.INS	Inline XBRL Instance Document (the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document)				
101.SCH	Inline XBRL Taxonomy Extension Schema Document.	—	—	—	Filed herewith
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.	—	—	—	Filed herewith
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.	—	—	—	Filed herewith
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.	—	—	—	Filed herewith
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.	—	—	—	Filed herewith

Exhibit Number	Exhibit Title	Incorporated by Reference			
		Form	File no.	Exhibit	Filing Date
104	Cover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101)	—	—	—	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.

†† Portions of this exhibit (indicated by asterisks) have been omitted in accordance with the rules of the SEC.

# Indicates a management contract or any compensatory plan, contract or arrangement.

* Schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K. The Registrant will furnish copies of any such schedules and exhibits to the SEC upon request.

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, 2021

By: /s/ Andrew Obenshain

Andrew Obenshain
President, Chief Executive Officer and Director
(Principal Executive Officer and Duly Authorized Officer)

Date: November 5, 2021

By: /s/ Gina Consylman

Gina Consylman
Chief Financial Officer
(Principal Financial Officer and Duly Authorized Officer)

Exhibit 10.30

OFFICE LEASE AGREEMENT

BETWEEN

ASSEMBLY ROW 5B, LLC, A DELAWARE LIMITED LIABILITY COMPANY, LANDLORD

AND

BLUEBIRD BIO, INC., A DELAWARE CORPORATION,
TENANT

DATE: NOVEMBER 2, 2021

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OFFICE LEASE AGREEMENT

THIS OFFICE LEASE AGREEMENT (this "**Lease**") is made this 2nd day of November, 2021, by and between ASSEMBLY ROW 5B, LLC, a Delaware limited liability company ("**Landlord**"), and BLUEBIRD BIO, INC., a Delaware corporation ("**Tenant**").

IN CONSIDERATION of the payments of rents and other charges provided for herein and the covenants and conditions hereinafter set forth, Landlord and Tenant hereby covenant and agree as follows:

ARTICLE I

REFERENCE PROVISIONS, DEFINITIONS AND EXHIBITS

As used in this Lease, the following terms shall have the meanings set forth in Sections 1.01 and 1.02 below.

Section 1.01. Reference Provisions.

A. **Leased Premises**: The premises located on the entirety of the eleventh (11th) and twelfth (12th) floors of the Building described in Section 1.01.J. below, as shown on the floor plans attached hereto as Exhibit A, and consisting, in the aggregate, of approximately sixty-one thousand one hundred eighty (61,180) square feet of rentable office space as measured in accordance with the Building Owners and Managers Association International Standard Method of Floor Measurement (ANSI/BOMA Z65.1-2017) for office buildings (the "**Measurement Standard**"). There shall be no remeasurement of the Leased Premises.

B. **Term**: The period beginning on the Term Commencement Date and ending on the Termination Date, as the same may be extended as provided herein.

C. **Term Commencement Date**: The date on which Landlord tenders possession of the Leased Premises to Tenant with the Tenant Work required to be performed by Landlord substantially completed (defined in Section 3.01.C) and otherwise in the condition required by Section 9.01 of this Lease. If the Tenant Work is not substantially complete, but if Landlord allows Tenant to take possession of the whole or any part of the Leased Premises for the Permitted Use, then the Term Commencement Date shall be the date on which Tenant takes such possession. Tenant's early access under Section 11 of the Work Agreement shall not constitute possession for purposes of the Term Commencement Date. The Term Commencement Date is estimated to occur on March 18, 2022 (the "**Estimated Term Commencement Date**").

D. **Rent Commencement Date**: The date that is three (3) months after the Term Commencement Date.

E. **Termination Date**: The date that is ten (10) years and nine (9) months after the Term Commencement Date (provided that, if such date is not the last day of a month, then the Termination Date shall be the last day of the month in which the Termination Date would have otherwise occurred), or any earlier date on which this Lease is terminated in accordance with the provisions hereof.

F. **Minimum Rent**:

Lease Year	Annually	Monthly
1 (calculated for 30,590 rentable square feet)	$1,376,550.00*	$114,712.50*
2	$2,822,233.40	$235,186.12
3	$2,892,590.40	$241,049.20
4	$2,964,782.80	$247,065.23
5	$3,038,810.60	$253,234.22
6	$3,114,673.80	$259,556.15
7	$3,192,372.40	$266,031.03
8	$3,271,906.40	$272,658.87
9	$3,353,887.60	$279,490.63
10	$3,437,704.20	$286,475.35
11	$3,523,356.20**	$293,613.02

* Pursuant to Section 5.02 below, no Minimum Rent shall be due or payable until the Rent Commencement Date.
** annualized.

G. **Security Deposit**: Two Million Seven Hundred Fifty-Three Thousand One Hundred and 00/100 Dollars ($2,753,100.00), to be held by Landlord in accordance with Section 17.07, which Security Deposit shall be paid by Tenant upon Tenant's execution of this Lease.

H. **Rent Payments**: Except to the extent Tenant is required to make such payments electronically, in the manner set forth in Section 5.01 of this Lease, Rent payments due herein shall be made payable to Landlord at the following address:

Assembly Row 5B, LLC- Property # 1730
c/o Federal Realty Investment Trust
P.O. Box 8500-9320
Philadelphia, PA 19178-9320

I. Notice Addresses:

TO LANDLORD:
Assembly Row 5B, LLC
c/o Federal Realty Investment Trust
909 Rose Avenue, Suite #200
North Bethesda, MD 20852
Attention: Legal Department

TO TENANT:

(prior to taking occupancy)

Bluebird Bio, Inc.
60 Binney Street

Cambridge, MA 02142
Attention: Legal Department

(following occupancy)

Bluebird Bio, Inc.
Assembly Row, Building 5
455 Grand Union Boulevard
Somerville, Massachusetts
Attention: Legal Department

J. **Building**: The term "**Building**" shall mean that certain building, known as Block 5B, located within the Project that contains the Leased Premises having a street address of 455 Grand Union Boulevard, Somerville, Massachusetts. The Building contains approximately 302,722 rentable square feet of Floor Area. The Building is located within that mixed use development in Somerville, Massachusetts known as Assembly Row at Assembly Square (the "**Master Assembly Row Development**"). Landlord shall be entitled to incorporate additional land or buildings into the Master Assembly Row Development or sever the Building from the Master Assembly Row Development; provided that in no event shall the addition or severing of any land or buildings, including the Building, from the Master Assembly Row Development (i) adversely affect or interfere with Tenant's rights hereunder (including Tenant's use of, or access to, the Leased Premises or the Common Areas), to more than a de minimis extent, (ii) increase Tenant's monetary obligations, and/or (iii) reduce and/or adversely affect Tenant's rights under this Lease to more than a de minimis extent. The Building may contain, in addition to office space, certain Common Areas and retail space below the Office Portion of the Building. The retail portions of the Building and/or certain of the Common Areas may be controlled separately from the Office Portion, by condominium regime or otherwise; provided that in no event shall such separate control (i) adversely affect or interfere with Tenant's rights hereunder (including Tenant's use of, or access to, the Leased Premises or the Common Areas) to more than a de minimis extent, (ii) increase Tenant's monetary obligations, (iii) reduce and/or adversely affect Tenant's rights under this Lease to more than a de minimis extent, (iv) increase Tenant's non-monetary obligations to more than a de minimis extent, and/or (v) cause the usable area of the Leased Premises or its ceiling heights to be reduced beyond a de minimis amount.

K. **Project**: The mixed-use project located at the intersection of Interstate 93, Route 28 and the Massachusetts Bay Transportation Authority's (MBTA) Orange Line, commonly known as Assembly Row at Assembly Square. The Project shall include the Building, any Common Areas and Project Common Areas and may contain, now or in the future, without limitation, residential portion(s) consisting of condominium and/or apartment units (and areas exclusively serving the same) and/or retail shopping areas (and areas exclusively serving the same) and/or hotel component(s) (and areas exclusively serving the same) as well as areas serving the foregoing properties generally; provided that in no event shall any future changes to the Project (i) adversely affect or interfere with Tenant's rights hereunder (including Tenant's use of, or access to, the Leased Premises or the Garage) to more than a de minimis extent, (ii) increase Tenant's monetary obligations, (iii) reduce and/or adversely affect Tenant's rights under

this Lease to more than a de minimis extent, (iv) increase Tenant's non-monetary obligations to more than a de minimis extent, and/or (v) cause the usable area of the Leased Premises or its ceiling heights to be reduced beyond a de minimis amount. If, at any time, components of the Building or any of the properties within the Project are controlled and/or owned by separate entities, by condominium regime or otherwise, this Lease shall be subject and subordinate to any easements or agreements between the owners of such portions. It is also specifically understood that within the Project certain publicly dedicated improvements (collectively, the "**Public Facilities**"), such as but not limited to roadways and, potentially, sidewalks, may from time to time be owned, operated and controlled by the City of Somerville, or the Commonwealth of Massachusetts or other governmental entity or agency. During such time as the Public Facilities are owned, operated and controlled by the City of Somerville, the Commonwealth of Massachusetts or other governmental entity or agency, at Landlord's option, such Public Facilities will not be deemed to be a part of the Project. The portions of the Project that are other than the Building and the Garage are referred to herein collectively as the "**Remaining Project**". Landlord reserves the right, from time to time, to change the name of the Project and/or the Building or the names of any individual streets and/or other named areas in the Project, as Landlord may reasonably determine.

L. **Office Portion**: The office portion of the Building, of which the Leased Premises are a part, as well as the portions of the Common Areas exclusively serving such office portion. The Office Portion of the Building contains approximately 276,214 rentable square feet of Floor Area. Landlord shall be entitled to incorporate additional areas within the Building into the Office Portion or sever different portions of the Office Portion from the remaining portions, and, in such event, to adjust the calculation of Tenant's Share of Taxes and Tenant's Share of Operating Costs on an equitable basis, as determined in Landlord's reasonable discretion based on the actual increase or decrease in the rentable square footage of the Office Portion.

M. **Land**: The parcel of land upon which the Building is situated. As of the Effective Date, there are no other Buildings located on the Land, and the Land and Building are taxed as a separate tax parcel.

N. **Parking Contracts**: One hundred twenty-three (123) monthly parking contracts ("**Parking Contracts**") which shall be for use in the garage located in the lower levels of the Building (the "**Garage**"), subject to the terms and conditions of Article XIII below.

O. **Permitted Use:** General business office use consistent with a first-class office building, and lawfully permitted ancillary uses thereto.

P. **Broker**: JLL

Q. **Schedules and Exhibits**: The schedules and exhibits listed below are attached to this Lease and are hereby incorporated in and made a part of this Lease.

Exhibit A Floor Plan
Exhibit B Work Agreement
Exhibit B-1 Preliminary Plan
Exhibit C Rules and Regulations
Exhibit D Rules for Tenant's Contractors
Exhibit E Security Specifications

Exhibit F Form of ROFO to Lease Agreement
Exhibit G Cleaning Specifications
Exhibit H HVAC Specifications
Exhibit I Location and Dimensions of Lobby Sign

Section 1.02. Definitions.

A. **Common Areas**: Any improvements, equipment, areas and/or spaces (as the same may be enlarged, reduced, replaced, increased, removed or otherwise altered by Landlord in accordance with the terms of this Lease) other than the Public Facilities (as defined in Section 1.01.K of the Lease) for the non-exclusive, common and joint use or benefit of Landlord, Tenant and other tenants, occupants and users of the Building. The Common Areas shall include loading docks and service areas, an elevator accessible from the loading dock, bicycle storage, and shower facilities. The Common Areas may include (not to be deemed a representation as to their availability) sidewalks, landscaped areas, parks, roofs, gutters and downspouts, parking garages (including, but not limited to, the Garage) and parking areas designated for Building use, access roads, driveways, service drives and service roads, stairs, landings, ramps, vertical transports (including, but not limited to elevators, escalators, and lobbies and service areas therefor), utility and mechanical rooms and equipment, shared corridors, shared lobbies, shared or public washrooms and other similar areas and improvements. Tenant acknowledges that portions of the Common Areas, to the extent the same exist outside of building envelopes (such as sidewalks), are governed by the REA (as defined in Section 1.02.L) and may be managed and/or controlled by the property manager under the REA. Subject to Landlord's reasonable rules and regulations, Tenant shall have access to the loading docks serving the Building during Building Hours at no separate cost or fee to Tenant.

B. **Project Common Areas**: Any existing or future improvements, equipment, areas and/or spaces within the Project (as the same may be enlarged, reduced, replaced, increased, removed or otherwise altered by Landlord in accordance with the terms of this Lease), including any Public Facilities within the Project (except for those Public Facilities that are not managed or maintained by Landlord), designated by Landlord for the non-exclusive, common and joint use or benefit of Landlord, Tenant and other tenants, occupants and users of the Project. The Project Common Areas may include (not to be deemed a representation as to their availability) sidewalks, landscaped areas, parks, roofs, gutters and downspouts, parking garages and parking areas designated for Project use, access roads, driveways, service drives and service roads, loading docks and service areas, stairs, landings, ramps, vertical transports (including, but not limited to elevators, escalators, and lobbies and service areas therefor), utility and mechanical rooms and equipment, shared corridors, shared lobbies, shared or public washrooms, and other similar areas and improvements. Tenant acknowledges that portions of the Project Common Areas, to the extent the same exist outside of building envelopes (such as sidewalks and/or parks), may, subject to the terms of this Lease, be governed by the Condominium Documents (as defined in Section 1.02.C) and/or the REA and may be managed and/or controlled by an agent of an applicable condominium association under the Condominium Documents or by the property manager under the REA.

C. **Condominium Documents**. Landlord may determine to establish a condominium with respect to the Building. If Landlord determines to establish a condominium,

then, so long as Tenant is provided with a customary non-disturbance agreement in form and substance reasonably acceptable to Tenant and Landlord, this Lease shall be subject and subordinate to all of the documents creating the condominium (the "**Condominium Documents**"); provided, however, that (i) in the exercise of any right thereunder, Landlord shall use reasonable efforts to minimize any interference with Tenant's use and enjoyment of the Leased Premises and any appurtenant rights herein granted, including, without limitation, Tenant's access to and from the Leased Premises, the Garage and the Common Areas; and (ii) neither the creation of the condominium nor the Condominium Documents shall (a) adversely modify, or expressly permit adverse modification of, the repair, maintenance, operation or service requirements set forth in this Lease, (b) diminish or adversely affect, to more than a de minimis extent, Tenant's use of, or access to, the Leased Premises or to the Common Areas or Tenant's other rights under this Lease, (c) increase Tenant nonmonetary obligations under this Lease to more than a de minimis extent, (d) increase Tenant's monetary obligations under this Lease, or (e) cause the usable area of the Leased Premises or its ceiling heights to be reduced beyond a de minimis amount. Without limiting the foregoing, in no event shall any common area charges allocable to the unit containing the Office Portion be included in Operating Costs (as hereinafter defined) under this Lease if such common area charges would otherwise be considered to be Exclusions (as hereinafter defined) but for the implementation of the condominium regime. If applicable, the "**Condominium Property**" shall refer to the Office Portion of the Building and common elements associated therewith, as described in the Condominium Documents.

D. **Floor Area**: When used with respect to the Leased Premises, the number of rentable square feet set forth in Section 1.01.A, above. When used with respect to any other space in the Building, Floor Area shall mean the number of rentable square feet of such space as determined using the Measurement Standard.

E. **Interest**: A rate per annum of ten percent (10%).

F. **Lease Year**: Each twelve (12) month period beginning with the Term Commencement Date, and each anniversary thereof, provided the Term Commencement Date occurs on the first day of a month. If the Term Commencement Date occurs on a day other than the first day of a month, then the first Lease Year shall begin on the Term Commencement Date and shall terminate on the last day of the twelfth (12th) full calendar month after the Term Commencement Date. Each subsequent Lease Year shall commence on the date immediately following the last day of the preceding Lease Year and shall continue for a period of twelve (12) full calendar months, except that the last Lease Year of the Term shall terminate on the date this Lease expires or is otherwise terminated.

G. **Legal Requirements**: All laws, statutes, orders, ordinances, zoning and other regulations, or ordinances of federal, state, county, municipal and other governmental authorities having jurisdiction.

H. **Operating Year**: Each respective calendar year that occurs either entirely within or partially within the Term (it being understood that the entire calendar year in which the Term Commencement Date occurs and the entire calendar year in which the Term ends shall each also be an Operating Year), or, at Landlord's option, any other twelve month period or part thereof designated by Landlord.

I. Intentionally Omitted.

J. **Person**: An individual, firm, partnership, association, corporation, limited liability company, or any other entity.

K. **Additional Rent**: All sums payable by Tenant to Landlord under this Lease other than Minimum Rent.

L. **REA**: That certain Declaration of Common Easements, Conditions, Covenants and Restrictions for the Master Project, and applicable to the Master Assembly Row Development, dated as of December 27, 2011 and recorded with the Middlesex South Registry of Deeds in Book 58177, Page 331, as the same may be amended from time to time.

M. **Rent**: Minimum Rent plus Additional Rent.

N. **Tenant's Operating Cost Proportionate Share:** Shall mean a fraction, the numerator of which is the Floor Area of the Leased Premises and the denominator of which is the total Floor Area of the Office Portion of the Building. As of the date hereof, Tenant's Operating Costs Proportionate Share is 22.15%.

O. **Tenant's Taxes Proportionate Share**: Shall mean a fraction, the numerator of which is the Floor Area of the Leased Premises and the denominator of which is the total Floor Area of the Building. As of the date hereof, Tenant's Taxes Proportionate Share is 20.21%.

P. Intentionally Omitted.

Q. **Building Hours**: From 8:00 a.m. until 6:00 p.m. on weekdays (excluding Holidays, as hereinafter defined), as may be modified by Landlord from time to time. The term "**Holidays**" shall mean any and all holidays designated by the federal government or by the Commonwealth of Massachusetts (excluding Patriot's Day).

R. **Tax Year**: For purposes of computing Tenant's Share of Taxes pursuant to Section 6.02 below, any fiscal/tax period (i.e., July 1 – June 30) in respect of which Taxes are due and payable to the appropriate governmental taxing authority, any portion of which period occurs during the Term of this Lease, the first such Tax Year being the one in which the Term Commencement Date occurs.

ARTICLE II

LEASED PREMISES AND COMMON AREAS

Section 2.01. Demise of Leased Premises.

Landlord demises and leases to Tenant, and Tenant leases and takes from Landlord, the Leased Premises together with the right to use, in common with others, the Common Areas and the Project Common Areas. Landlord has the exclusive right to (i) use the exterior faces of all perimeter walls of the Building, the roof and all air space above the Building, and (ii) install, maintain, use, repair and replace pipes, ducts, cables, conduits, plumbing, vents, utility lines and wires to, in, through, above and below the Leased Premises and other parts of the Building; provided that the foregoing items shall be placed behind the walls, above the ceilings and below the floor of the Leased Premises to the extent possible, unless in an emergency placement in or

through the Leased Premises is required on a temporary basis, but in all instances, in such a manner as to reduce to a minimum interference with Tenant's use of the Leased Premises and provided such use does not cause the usable area of the Leased Premises or its ceiling heights to be reduced beyond a de minimis amount.

Section 2.02. Intentionally Omitted.

ARTICLE III

TERM

Section 3.01. Term.

A. This Lease shall be effective as of the date hereof. The Term shall commence on the Term Commencement Date specified in Section 1.01.C, above, and shall be for the period of time specified in Section 1.01.B, above, and expire on the Termination Date specified in Section 1.01.E, above.

B. Prior to delivery of the Leased Premises, Landlord shall perform the Tenant Work (as defined in Exhibit B). In the event that the Tenant Work is not substantially completed, or Landlord is otherwise unable to tender possession of the Leased Premises to Tenant in the condition required by this Lease, by the Estimated Term Commencement Date for any reason or cause, other than as a result of a Tenant Delay (as defined in Exhibit B), then the Term Commencement Date shall be delayed and shall be the earlier of (i) the date that any portion of the Leased Premises are occupied by Tenant for the conduct of its business, or (ii) the date that the Tenant Work is substantially completed (as defined in Section 3.01.C, below). In the event the Term Commencement Date is so delayed, Landlord shall not be liable or responsible for any claims, damages, or liabilities by reason of such delay except as expressly set forth in Sections 3.01.D and 3.01.E below. Notwithstanding the foregoing, in the event that the Tenant Work is not substantially completed, or Landlord is otherwise unable to tender possession of the Leased Premises to Tenant by the Estimated Term Commencement Date, as a result of a Tenant Delay, then the Term Commencement Date and all the obligations of Tenant hereunder, including, but not limited to, the obligations of Tenant to pay Minimum Rent and Additional Rent, shall not be delayed and shall begin on the date that the Tenant Work would have been substantially completed had such Tenant Delay not occurred. At Landlord's request, Tenant shall promptly enter into one or more supplementary written agreements specifying or confirming the Term Commencement Date and Termination Date.

C. For purposes of this Lease, the Leased Premises shall be deemed "**substantially completed**" when all items of Tenant Work have been completed subject only to the completion of punchlist items of work which do not materially interfere with Tenant's intended use of the Leased Premises, and all governmental approvals required for the lawful occupancy of the entire Leased Premises are satisfied, or (ii) the condition set forth in subsection (i) would have occurred but for Tenant Delay. The satisfaction of all governmental approvals required for the lawful occupancy of the entire Leased Premises shall be deemed to exist if a temporary (provided such temporary certificate of occupancy does not expire or be revoked prior to Landlord's obtaining a permanent certificate of occupancy) or permanent certificate of occupancy for the entire Leased Premises has been issued by any governmental authority having

jurisdiction over the Leased Premises. Upon request by Landlord, Tenant shall promptly execute and deliver any and all documentation requested by Landlord in connection with the application for a certificate of occupancy (or similar occupancy permit) for the Leased Premises. Without limiting the foregoing, promptly following receipt of notice from Tenant that Tenant has installed its furniture, fixtures, equipment and other personal property, Landlord shall apply for and thereafter obtain a permanent certificate of occupancy for the Leased Premises.

D. Notwithstanding the foregoing, if the Term Commencement Date shall not have occurred on or before the date which is forty-five (45) days after the Estimated Term Commencement Date (the "**First Outside Date**"), then (i) for and with respect to each day between the First Outside Date and the earlier of (x) the Term Commencement Date and (y) the date which is sixty (60) days after the First Outside Date (the "**Second Outside Date**"), as its sole and exclusive remedy on account thereof, Tenant shall receive a credit against the Minimum Rent next becoming payable under this Lease in an amount equal to the per diem Minimum Rent payable for the Leased Premises, and (ii) for and with respect to each day from and including the Second Outside Date through the day immediately prior to the Term Commencement Date, as its sole and exclusive remedy on account thereof, Tenant shall receive a credit against the Minimum Rent next becoming payable under this Lease in an amount equal to two (2) times the per diem Minimum Rent payable for the Leased Premises. Notwithstanding anything to the contrary contained herein, there shall be no credit against Minimum Rent for any delay in the occurrence of the Term Commencement Date arising from any Tenant Delay or any Force Majeure Delay. In no event, however, shall the Force Majeure Delays to either the First Outside Date or the Second Outside Date exceed ninety (90) days.

E. Notwithstanding the foregoing, if (i) the Term Commencement Date shall not have occurred on or before the date which is twelve (12) months after the Estimated Term Commencement Date (as the same shall be extended for delays arising out of or resulting from Tenant Delays, the "**Final Outside Date**"), and (ii) not less than fifteen (15) days prior to the delivery of a Termination Notice (as hereinafter defined) Tenant shall have delivered a Reminder Notice (as hereinafter defined) to Landlord, then Tenant may elect, as its sole and exclusive remedy on account thereof, to terminate this Lease by giving Landlord a Termination Notice, which Termination Notice may be given not earlier than the Final Outside Date and not later than sixty (60) days following the Final Outside Date, with such termination to be effective immediately upon the giving by Tenant of such Termination Notice. If Tenant validly terminates this Lease in accordance with the foregoing provisions, this Lease shall be null and void and of no further force and effect, and except as expressly and specifically set forth herein, the parties shall have no further liabilities, responsibilities or obligations hereunder. Notwithstanding any provision contained herein, if the Term Commencement Date occurs at any time prior to the valid termination of this Lease in accordance with the foregoing provisions, then Tenant shall have no further right to terminate this Lease pursuant to this Section 3.01(E).

A "**Reminder Notice**" shall mean a Notice delivered by Tenant to Landlord stating the following in capitalized and bold type on the first page of such Notice: **"IN ACCORDANCE WITH AND SUBJECT TO SECTION 3.01(E) OF THE LEASE, IF THE TERM COMMENCEMENT DATE HAS NOT OCCURRED BY THE FINAL OUTSIDE DATE, THE TENANT MAY TERMINATE THE LEASE. LANDLORD IS HEREBY**

NOTIFIED THAT THE TERM COMMENCEMENT DATE HAS NOT OCCURRED AS OF THE DATE OF THIS NOTICE."

F. A "**Termination Notice**" shall mean a Notice delivered by Tenant to Landlord stating the following in capitalized and bold type on the first page of such Notice: **"IN ACCORDANCE WITH AND SUBJECT TO THE TERMS AND CONDITIONS OF SECTION 3.01(E) OF THE LEASE, TENANT HEREBY ELECTS TO TERMINATE THE LEASE."**

Section 3.02. End of Term.

This Lease shall terminate on the Termination Date without the necessity of notice from either Landlord or Tenant. Upon the Termination Date or earlier termination of the Lease, Tenant shall quit and surrender to Landlord the Leased Premises broom clean and in good condition and repair consistent with Tenant's obligations under Section 10.02 of this Lease, subject to any removal and restoration obligations Tenant may have pursuant to Section 9.05 hereof, and ordinary wear and tear, loss or damage from casualty or condemnation and repairs for which Landlord is responsible under this Lease excepted; and shall surrender to Landlord all keys and access cards, if applicable, to or for the Leased Premises. In addition, Tenant shall remove Tenant's Property in accordance with and subject to the provisions of Section 9.06 hereof (the foregoing, collectively, the "**Required Condition**").

Section 3.03. Holding Over.

Tenant agrees that it will not occupy or retain or allow occupancy or retention by any subtenant of possession of the Leased Premises at any time after the expiration or other termination of the Term. If Tenant fails to vacate the Leased Premises and deliver possession of the Leased Premises in the Required Condition on the Termination Date or earlier termination of the Term, Landlord shall have the benefit of all provisions of law respecting the speedy recovery of possession of the Leased Premises (whether by summary proceedings or otherwise). In addition to and not in limitation of the foregoing, occupancy subsequent to the Termination Date or earlier termination of the Term ("**Holdover Occupancy**") shall be a tenancy at sufferance. Holdover Occupancy shall be subject to all terms, covenants, and conditions of this Lease (including those requiring payment of Additional Rent), except that the Minimum Rent for each month or partial month that Tenant holds over ("**Holdover Minimum Rent**") shall be equal to one and one-half (1-1/2) times the monthly Minimum Rent payable in the last Lease Year. Tenant acknowledges and agrees that Landlord may undertake a renovation or redevelopment of the Leased Premises or Building and/or lease the Leased Premises (in whole, in part or as a part of a larger portion of the Building) to another tenant after the expiration or other termination of the Term and that any breach or other violation of the provisions of this Section 3.03 may result in material damages to Landlord (including without limitation, any damages to Landlord in connection with renovation or redevelopment activities or its reletting of the Leased Premises and/or other portions of the Building). Tenant agrees to indemnify, hold harmless and defend Landlord for all damages, losses, expenses and costs (including without limitation reasonable attorneys' fees, court costs, and lost business opportunity regarding any prospective tenant(s) for the Leased Premises), suffered by Landlord as a result of Tenant's Holdover Occupancy, provided that no such damages, losses or costs shall be due or payable with respect to the first month of Tenant's Holdover Occupancy.

Section 3.04 Extension Options.

A. Tenant shall have the option to extend the Term hereof for two (2) additional periods of five (5) years each (hereinafter each an "**Option Period**"), subject to the following terms and conditions:

(i) Tenant may exercise such option by giving Landlord Notice ("**Extension Notice**") of its intent to exercise said option, such Extension Notice to be received by Landlord at least twelve (12) months prior to the expiration of the original Term of this Lease or the then current Option Period, as applicable; and

(ii) At the time of the Extension Notice and as of the commencement of the applicable Option Period, Tenant (i) is not in monetary or material non-monetary Default, and (ii) has not assigned this Lease or sublet more than twenty-five percent (25%) of the Leased Premises, other than to a Permitted Transferee (as hereinafter defined).

B. All other terms and conditions of this Lease shall remain unchanged and apply during the applicable Option Period except that Minimum Rent for such Option Period (including any periodic increases therein) shall be the then-prevailing fair market value for use of the Leased Premises (as determined below) during such Option Period ("**Fair Rental Value**"), taking into consideration all relevant factors, including, without limitation, then-current rental rates for comparable office space in the City of Somerville, Massachusetts, then-current rates for office space in the Building and in the Project, and assuming the then as-is condition of the Leased Premises. Without limiting the foregoing, office space shall be deemed to be "comparable office space" if it is located in Class A buildings located in Somerville, Massachusetts, which are comparable to the Building with respect to age, size, quality and access to public transportation, retail and other amenities. If Tenant desires to get an estimate of what Landlord believes the Fair Rental Value will be, Tenant may request that Landlord give such an estimate by written notice delivered not more than eighteen (18) months prior to the commencement of the applicable Option Period, and within thirty (30) days after receipt of Tenant's request, Landlord will provide Tenant with its good faith non-binding estimate of the Fair Rental Value for the applicable Option Period.

C. Within thirty (30) days after receipt of Tenant's Extension Notice (but Landlord shall not be obligated to deliver Notice of Landlord's proposed Fair Rental Value more than fifteen (15) months prior to the expiration of the original Term of this Lease or the then current Option Period), Landlord shall give Tenant Notice of the proposed Fair Rental Value and the basis therefor. The parties shall then, in good faith, endeavor to agree between themselves on the Fair Rental Value. If the parties fail to so agree on the Fair Rental Value within thirty (30) days after Landlord's Notice of the proposed Fair Rental Value, then the Fair Rental Value shall be decided by the "broker" method as provided herein.

(i) If the parties have not agreed on the Fair Rental Value within thirty (30) days after Landlord's Notice of the proposed Fair Rental Value, Landlord and Tenant shall each send the other Notice of the broker it wishes to designate to determine the Fair Rental Value on its behalf within ten (10) business days thereafter. If either party fails to notify the other of the designation of its broker within such ten (10) business day period, and such failure continues for five (5) business days after Notice of such failure, then the broker designated by the party that

delivered its Notice shall be the broker to determine the Fair Rental Value for the Leased Premises. Each broker (if two (2) brokers are designated hereunder) shall have fifteen (15) business days after the later date of each party's Notice to the other hereunder to make and deliver to both parties a written determination of the Fair Rental Value.

(ii) If the two (2) brokers so appointed agree on the Fair Rental Value, the Fair Rental Value shall be the amount so determined.

(iii) If the two brokers so appointed do not agree on the Fair Rental Value within such fifteen (15) business day period, and if the difference between the Fair Rental Value determined by each broker is not more than One Dollar ($1.00) per square foot of Floor Area, the Fair Rental Value shall be an amount equal to the quotient obtained by dividing the sum of the Fair Rental Values determined by each broker by two (2).

(iv) If the two (2) brokers so appointed do not agree on the Fair Rental Value within such fifteen (15) business day period, and if the difference between the Fair Rental Value determined by each broker is more than One Dollar ($1.00) per square foot of Floor Area, the two (2) brokers shall within ten (10) days thereafter jointly appoint a third (3rd) broker. The third (3rd) broker shall make a valuation within thirty (30) days after its appointment, and the Fair Rental Value shall be an amount equal to the quotient obtained by dividing the sum of the two closest Fair Rental Values (calculated on an absolute dollar basis) determined among all three (3) brokers by two (2).

D. Each broker appointed pursuant to Paragraph C shall be a disinterested person of recognized competence who has had a minimum of ten (10) years of experience in the leasing of office space in the greater Boston market area. All valuations of the Fair Rental Value shall be in writing. Landlord and Tenant shall pay for the expenses of the broker each has designated and the expenses of the third (3rd) broker shall be borne one-half (1/2) by Landlord and one-half (1/2) by Tenant. The determination made hereunder shall be final and binding on both Landlord and Tenant.

E. If such option is not timely exercised, Tenant's right to extend shall expire and the Lease shall terminate at the end of the original Term or the then current Option Period, as applicable, it being agreed that time is of the essence with respect to the giving of any exercise Notice pursuant to this Section 3.04.

ARTICLE IV

USE AND OPERATION OF THE LEASED PREMISES

Section 4.01. Use.

A. Tenant shall use the Leased Premises solely for the Permitted Use, and for no other purpose.

B. Landlord shall cause, as of the Term Commencement Date, the Leased Premises, the Building Systems and the Common Areas appurtenant to the Leased Premises to be in compliance with all Legal Requirements applicable thereto. In the event that the Leased Premises or the Common Areas appurtenant to the Leased Premises are found to have been in violation of any Legal Requirement as of the Term Commencement Date, Landlord will

promptly commence to correct such violation (and thereafter diligently and continuously pursue such action until such violation is finally corrected) at its sole cost and expense. During the Term, Landlord shall be responsible for the compliance of the Common Areas with all Legal Requirements, including, without limitation, the requirements of the Americans with Disabilities Act (42 U.S.C. Section 12101 et seq.) and the regulations and Accessibility Guidelines for Buildings and Facilities issued pursuant thereto, as the same may be amended from time to time, to the extent that non-compliance (x) would impair Tenant's use and occupancy of the Leased Premises for the Permitted Uses or Tenant's use of the Garage or the Common Areas for their intended purposes; or (y) would adversely restrict Tenant's access to the Leased Premises, the Garage or the Common Areas (provided that in all cases Landlord shall have the right to contest in good faith any alleged violation of applicable Legal Requirements, including the right to apply for and obtain a waiver or deferment of compliance, the right to assert any and all defenses allowed at law or in equity, and the right to appeal any decisions, judgments or rulings to the fullest extent permitted by law). Subject to Landlord's obligation to deliver the Leased Premises and the Building Systems in compliance with applicable Legal Requirements as of the Term Commencement Date, Tenant shall comply with all Legal Requirements affecting the Leased Premises or relating to the use, occupancy or alteration thereof and all the orders or recommendations of any insurance underwriters, safety engineers, and loss prevention consultants as may from time to time be consulted by Landlord; provided, however, Tenant shall not be obligated to make any structural alterations to the Leased Premises or any alterations to the Building (including the Building Systems (as hereinafter defined) or Common Areas) in order to comply with applicable Legal Requirements, unless such compliance is required solely as a result of (1) the specific manner and nature of Tenant's use or occupancy of the Leased Premises, as distinguished from general office use, (2) alterations made by Tenant, or (3) a Default by Tenant of any of the provisions of this Lease. If any Legal Requirement requires a permit or license for Tenant's operation of the business conducted in the Leased Premises, then Tenant shall obtain and keep current such permit or license at Tenant's expense and shall promptly deliver a copy thereof to Landlord. Use of the Leased Premises and the Building shall be subject to all declarations, easements, covenants, conditions and restrictions that may now or hereafter encumber the Building (including the Land), as may be amended from time to time, provided that any future agreements do not (i) have an adverse impact on Tenant's use of or access to the Leased Premises or the Garage, or (ii) interfere with Tenant's use of the Leased Premises for the conduct of its business to more than a de minimis extent, or (iii) increase any of Tenant's monetary obligations under this Lease, (iv) decrease any of Tenant's rights under this Lease to more than a de minimis extent, (v) increase any of Tenant's non-monetary obligations to more than a de minimis extent, and/or (vi) cause the usable area of the Leased Premises or its ceiling heights to be reduced beyond a de minimis amount (any of the foregoing, individually or collectively, a "**Tenant Adverse Impact**"). In addition, if Landlord makes any alteration to any part of the Building as a result of any damage or alteration to the Leased Premises caused or made by or on behalf of Tenant (after Notice and the expiration of any applicable cure period hereunder with respect thereto), or in order to comply with the requirement of any Legal Requirement and such requirement is a result of Tenant's particular business or use of the Leased Premises, as distinguished from general office use, then Tenant shall reimburse Landlord upon demand for the cost thereof. In no event shall Tenant use the Leased Premises for purposes which are prohibited by zoning or similar laws or regulations, or covenants, conditions or

restrictions of record. Tenant acknowledges and agrees it is solely responsible for determining if its business complies with the applicable zoning regulations, and that Landlord makes no representation (explicit or implied) concerning such zoning regulations. Tenant, its agents and employees shall abide by and observe the rules and regulations attached hereto as Exhibit C, and such other rules or regulations as may be promulgated from time to time by Landlord (and/or the owner of any Common Areas or Project Common Areas) in connection with the use, operation and maintenance of the Building, Common Areas and Project Common Areas, provided that any future changes to the rules and regulations do not have a Tenant Adverse Impact. Landlord shall not be liable to Tenant for violation of any such rules and regulations by any other tenant, its employees, agents, contractors or invitees.

C. Tenant shall, at its sole expense and subject to Landlord's express obligations under this Lease: (i) keep the Leased Premises in a good order and condition consistent with the operation of a first-class office building; (ii) pay before delinquency any and all taxes, assessments and public charges levied, assessed or imposed upon Tenant's business, upon the leasehold estate created by this Lease or upon Tenant's fixtures, furnishings or equipment in the Leased Premises; (iii) not use or permit or suffer the use of any portion of the Leased Premises for any unlawful purpose; (iv) not use the plumbing facilities for any purpose other than that for which they were constructed, or dispose of any foreign substances therein; (v) not place a load on any floor exceeding the floor load per square foot which such floor was designed to carry (which floor load is 100 pounds per square foot) in accordance with the plans and specifications of the Building, and not install, operate or maintain in the Leased Premises any heavy item of equipment except in such manner as to achieve a proper distribution of weight; (vi) not strip, overload, damage or deface the Leased Premises, or the hallways, stairways, elevators, parking facilities or other public areas of the Building (including without limitation, the Land), or the fixtures therein or used therewith, nor permit any hole to be made in any of the same; (vii) not move any furniture or equipment into or out of the Leased Premises except at such reasonable times and in such manner as Landlord may from time to time reasonably designate; (viii) not install or operate in the Leased Premises any electrical heating, air conditioning or refrigeration equipment, or other equipment not shown on approved plans which will increase the amount of electricity required for use of the Leased Premises as general office space in excess of six (6) watts per square foot of the Leased Premises (other than ordinary office equipment such as personal computers, printers, copiers and the like and exclusive of the HVAC Service (as hereinafter defined)) without first obtaining the written consent of Landlord, which consent shall not be unreasonably withheld, conditioned or delayed; and (ix) not install any other equipment of any kind or nature which will or may necessitate any changes, replacements or additions to, or in the use of, the water, heating, plumbing, air conditioning or electrical systems of the Leased Premises or the Building, without first obtaining the written consent of Landlord, which consent shall not be unreasonably withheld, conditioned or delayed.

D. In addition to and not in limitation of the other restrictions on use of the Leased Premises set forth in this Section 4.01, Tenant hereby agrees that the following uses of the Leased Premises shall not be considered to be "office use" and shall not be permitted: (1) any use of the Leased Premises by an organization or person enjoying sovereign or diplomatic immunity; (2) any use of the Leased Premises by or for any medical or mental health services, or dental practice or any clinical medical services; (3) any use of the Leased Premises by or for an

employment agency or bureau if clients or customers regularly appear at or visit the Leased Premises (as opposed to employment agency services handled via the internet or other technologies); (4) any use of the Leased Premises for classroom purposes (other than internal training purposes); (5) any use of the Leased Premises by or for any user which distributes governmental or other payments, benefits or information to persons that regularly appear at or visit the Leased Premises; (6) any other use of the Leased Premises or any portion of the Building by any user that will attract a volume or frequency of visitor or employee to the Leased Premises or any portion of the Building which is not consistent with the standards of a high quality, first-class office building in the area in which the Building is located or that will in any way impose an excessive demand or use on the facilities or services of the Leased Premises or the Building. Landlord acknowledges and agrees that (i) based on Tenant's current design and configuration of the Leased Premises, Tenant's current contemplated use of the Leased Premises does not and will not violate the terms of this Section 4.01.D.(6), and (ii) Tenant will not be in violation of the terms of this Section 4.01.D.(6) so long as Tenant's use does not habitually attract a volume or frequency of visitor or employee to the Leased Premises that is materially higher than the volume or frequency of visitors or employees attracted to the premises of other tenants in the Building.

Section 4.02. Signs and Advertising.

A. Tenant shall not inscribe, paint, affix, or otherwise display any sign, advertisement or notice on any part of the outside or inside of, or upon, the Building (including without limitation, the Land). Landlord shall prepare and install a name plate or electronic listing designating Tenant on the directory for the Building. The initial installations of Tenant's directory listing in connection with Tenant's initial occupancy shall be at Landlord's expense, and any replacements shall be made by Landlord at Tenant's sole cost and expense. Tenant may, at Tenant's sole cost and expense, install Building standard suite entry signage to be affixed at the entrance to the Leased Premises on both the eleventh (11th) and twelfth (12th) floors of the Building, the location, dimensions, design and appearance of which shall be subject to Landlord's prior written consent in all respects. If any other signs, advertisements or notices are painted, affixed, or otherwise displayed without the prior approval of Landlord, Landlord shall have the right to remove the same, and Tenant shall be liable for any and all costs and expenses incurred by Landlord in such removal.

B. So long as this Lease has not been terminated or Tenant's right to possession of the Leased Premises has not been terminated, Tenant shall have the non-exclusive right, provided in each case the Lobby Sign Conditions are satisfied, to install, at Tenant's sole cost and expense, a sign consisting of the name and/or logo of Tenant in the main lobby of the Building (the "**Lobby Sign**") in the location set forth on Exhibit I attached hereto. The size of the Lobby Sign shall not exceed the dimensions set forth on Exhibit I, and, prior to Tenant's installation of the Lobby Sign, Landlord shall approve the design and materials of the Lobby Sign, which approval shall not be unreasonably withheld, conditioned or delayed. The "**Lobby Sign Conditions**" are: (i) the installation, maintenance and removal of such Lobby Sign (including, without limitation, the repair lobby upon removal of such Lobby Sign) is performed at Tenant's expense in accordance with the terms and conditions governing alterations pursuant to Section 9.03 hereof, and (ii) Tenant, itself, or a Permitted Transferee is occupying at least one

(1) full floor of the Leased Premises. Without limiting the foregoing, Landlord hereby approves the design of the Tenant's lobby signs at Tenant's leased premises located at 60 Binney Street, Cambridge, Massachusetts. Notwithstanding the foregoing provisions of this Section 4.02 to the contrary, within thirty (30) days after the date on which (x) Tenant or a Permitted Transferee no longer occupies at least one (1) full floor of the Leased Premises, or (y) the Term of the Lease expires or is terminated, then Tenant shall, at its sole cost and expense, remove the Lobby Sign and restore all damage to the Building caused by the installation and/or removal of the Lobby Sign, which removal and restoration shall be performed in accordance with the terms and conditions governing alterations pursuant to Section 9.03 hereof. The right to the Lobby Sign granted pursuant to this Section 4.02 is personal to Tenant and, except for a Permitted Transferee, may not be exercised by any occupant, subtenant, or other assignee of Tenant unless agreed to by Landlord in Landlord's sole and absolute discretion.

ARTICLE V

RENT

Section 5.01. Rent Payable.

A. Commencing on the Term Commencement Date, Tenant shall pay all Rent to Landlord, without prior notice or demand and, except as otherwise expressly set forth in this Lease, without offset, deduction or counterclaim whatsoever, in the amounts, at the rates and times set forth in this Lease, in the manner set forth in this Section 5.01, provided, however, that payments of Minimum Rent shall not commence until the Rent Commencement Date. All payments of Rent shall be made at the place set forth in Section 1.01.H or as Landlord may otherwise designate by Notice to Tenant.

B. If Tenant fails to pay any installment of Rent on or before the date the same becomes due and payable, such unpaid installment of Rent shall bear Interest as set forth in Section 17.03 of this Lease until paid. In addition, if Tenant fails to make any payment of Rent by the date that is five (5) days after such Rent is due and payable, Tenant shall pay Landlord a late payment charge (the "**Late Fee**") equal to the greater of (i) five percent (5%) of such payment of Rent, or (ii) Twenty Dollars ($20.00) per day from the due date until the date of receipt by Landlord, except that Landlord shall not charge any such interest and/or the Late Fee with respect to the first (1st) such instance in any twelve (12) month period, if such amounts are paid within five (5) days after Notice that the same are delinquent. Payment of such Interest and/or the Late Fee shall not excuse or waive the late payment of Rent.

C. If Landlord receives two (2) or more checks from Tenant that are dishonored by Tenant's bank, all checks for Rent thereafter shall be bank certified and Landlord shall not be required to accept checks except in such form. Tenant shall pay Landlord any bank service charges resulting from dishonored checks, plus Fifty Dollars ($50.00) for each dishonored check as compensation to Landlord for the additional cost of processing such check.

D. Any payment by Tenant of less than the total Rent due shall be treated as a payment on account. Acceptance of any check bearing an endorsement, or accompanied by a letter stating, that such amount constitutes "payment in full" (or terms of similar import) shall not be an accord and satisfaction or a novation, and such statement shall be given no effect.

Landlord may accept any check without prejudice to any rights or remedies which Landlord may have against Tenant.

E. If the Term begins or ends on a date other than the first day of a month, Rent for the first month of the Term and/or the last month of the Term, as the case may be, shall be prorated on a daily basis based upon the number of days in such month and shall be paid in advance.

Section 5.02. Payment of Minimum Rent and Additional Rent.

Tenant shall pay Landlord the Minimum Rent set forth in Section 1.01.F, above, in equal monthly installments, in advance, commencing on the Rent Commencement Date, and on the first day of each calendar month thereafter throughout the Term. Tenant shall pay Landlord Additional Rent at the times and in the manner set forth in this Lease. An amount equal to the first month's Minimum Rent shall be paid in advance upon Tenant's execution of this Lease and credited toward the first payment of Minimum Rent due.

Section 5.03. Tenant's Share of Taxes.

A. "**Taxes**" means all governmental or quasi-governmental real estate taxes, fees, charges and assessments (whether general, special, ordinary, or extraordinary) applicable to the Office Portion or applicable to the Building (including, without limitation, the Land, but excluding the Garage), together with all reasonable costs and fees (including reasonable appraiser, consultant and attorney's fees) incurred by Landlord in any tax contest, appeal or negotiation. The term "Taxes" shall also include that portion of any ground rent payments made by Landlord that represent the pass-through of real estate taxes from any ground lessor to Landlord and all rent or services taxes and/or so-called "gross receipts" or "receipts" taxes (including, but not limited to, any business license, sales, use or similar taxes) whether or not enacted in addition to, in lieu of or in substitution for any other tax. "Taxes" shall also include any personal property taxes incurred on Landlord's personal property used in connection with the Building. "Taxes" shall not include (x) personal income taxes, personal property taxes on Landlord's personal property not used in connection with the Building, franchise taxes levied against Landlord, capital gain, transfer, estate or inheritance taxes, or (y) any current or future development, mitigation or impact fees, assessments or subsidies associated with the initial construction of the Building and other improvements at the Project (including, without limitation, contributions to public realm improvements and costs to construct the Public Facilities). Taxes shall only include the Taxes assessed directly for and allocable to the applicable fiscal tax year that Tenant is obligated to pay Taxes under this Lease and shall not include any Taxes that represent a true-up or delayed assessment of the Tax obligations for any prior fiscal year during which the Building was under construction or being substantially completed. To the extent that the Building is not separately assessed for real estate tax purposes, but is assessed as part of a larger parcel or consists of multiple parcels, Landlord shall make a reasonable allocation as to the amount of real estate taxes that should be allocated to the Building for purposes of determining Tenant's Share of Taxes under this Lease. Landlord's allocation, if made in good faith, shall be final. Tenant shall pay before delinquency any business, rent or other taxes or fees that are now or hereafter levied, assessed or imposed upon Tenant's use or occupancy of the Leased Premises, the conduct of Tenant's business at the Leased Premises, or Tenant's equipment, fixtures, furnishings, inventory or personal property. If any such tax or fee

is enacted or altered so that such tax or fee is levied against Landlord or so that Landlord is responsible for collection or payment thereof, then Tenant shall pay as Additional Rent the amount of such tax or fee. "Taxes" shall not include any real estate taxes, fees, charges or assessments that are not applicable to or allocable to the Office Portion, Building or Land. If any governmental, quasi-governmental, public or other authority having jurisdiction now or in the future imposes a gross receipts or receipts tax or other tax, fee, charge and/or assessment of any kind or nature upon, against or with respect to the Minimum Rent and/or Additional Rent payable hereunder or otherwise received from the Building, whether imposed in substitution of all or any part of the taxes, fees, charges and assessments levied or assessed against the Building or Land or in addition thereto, the entire amount of such gross receipts tax or other tax, fee, charge or assessment payable on account of the Minimum Rent and/or Additional Rent (as determined by Landlord) shall be paid promptly by Tenant whether such gross receipts tax or other tax, fee, charge or assessment is imposed nominally on Landlord or Tenant, such payment to be made either directly to the appropriate governmental, quasi-governmental, public or other authority (if such is required by such authority) or indirectly, by payment as Additional Rent to Landlord, which shall in turn be required to promptly pay over amounts received by it pursuant to the foregoing provisions to such authority.

B. Commencing on the Term Commencement Date, for each Tax Year, Tenant shall pay to Landlord, in the manner provided herein, an amount (such amount, "**Tenant's Share of Taxes**") equal to Tenant's Taxes Proportionate Share times the Taxes for such Tax Year, provided, however, that for the Tax Years during which the Term begins and ends, Tenant's Share of Taxes shall be prorated based upon the actual number of days of the Term during each such Tax Year.

C. Tenant shall pay Tenant's Share of Taxes in such equal monthly installments (the "**Tax Estimates**") as Landlord estimates from time to time, with the first installment being due on the Term Commencement Date and each succeeding installment being due on the first day of each calendar month thereafter. By not later than one hundred eighty (180) days after the end of each Tax Year, Landlord shall send Tenant a statement setting forth the amount of the Tenant's Share of Taxes and the sum of the Tax Estimates which have been paid by Tenant for such Tax Year. If the amount of the Tenant's Share of Taxes for such period exceeds the total of the Tax Estimates paid by Tenant, Tenant shall pay the difference to Landlord within thirty (30) days after receipt of such statement. If the total of the Tax Estimates paid by Tenant for such period exceeds the Tenant's Share of Taxes for such period, Landlord shall credit the difference toward the Rent next due and, at the end of the Term, refund any excess amount of Tenant's Share of Taxes paid by Tenant, less the amount of any moneys owed to Landlord by Tenant. Landlord shall credit Tenant with its Tenant's Taxes Proportionate Share of any refund received by Landlord of any Taxes to which Tenant has contributed by paying the Tenant's Share of Taxes reserved hereunder. Landlord shall provide Tenant with a copy of the real estate tax bill for the Building promptly following Tenant's request therefor.

ARTICLE VI

COMMON AREAS

Section 6.01. Use of Common Areas.

Tenant shall have a non-exclusive right to use such portions of the Common Areas and Project Common Areas as Landlord shall designate from time to time for use of office and retail tenants of the Building and the Project, respectively, subject to the exclusive control and management of Landlord (and/or the owner of such Common Areas or Project Common Areas) and the rights of Landlord (and/or the owner of such Common Areas or Project Common Areas) and of other tenants. Except as may otherwise expressly be provided in this Lease (including this Section 6.01 with respect to the Common Areas and the Project Common Areas), the lease of the Leased Premises does not include the right to use (i) the roof, mechanical rooms, electrical closets, janitorial closets, telephone rooms, parking areas or other non-common or non-public areas of the Building, or (ii) any portion of the Remaining Project. Tenant shall not use the Common Areas or Project Common Areas for any sales or display purposes, or for any purpose which would impede or create hazardous conditions for the flow of pedestrian or other traffic. The Common Areas and Project Common Areas shall at all times be subject to the exclusive control and management of Landlord (and/or the owner of such Common Areas or Project Common Areas).

Section 6.02. Management and Operation of Common Areas.

Landlord shall (or shall cause others to) operate, repair, equip and maintain the Common Areas and the Project Common Areas and shall have the exclusive right and authority to employ and discharge personnel with respect thereto. Without limiting the foregoing, Landlord may (i) use the Project Common Areas, the lobby of the Office Portion, and any Common Areas exclusively serving the retail areas of the Building for promotions, exhibits, displays, outdoor seating, food facilities and any other use which tends to benefit the Building; (ii) grant the right to conduct sales in the Project Common Areas, the lobby of the Office Portion, and any Common Areas exclusively serving the retail areas of the Building; (iii) erect, remove and lease kiosks, planters, pools, sculptures and other improvements within the Project Common Areas, the lobby of the Office Portion, and any Common Areas exclusively serving the retail areas of the Building; (iv) enter into, modify and terminate easements and other agreements pertaining to the use and maintenance of the Building; (v) construct, maintain, operate, replace and remove lighting, equipment, and signs on all or any part of the Common Areas; (vi) provide security personnel for the Building; (vii) provided Tenant is able to use its entire allocation of Parking Contracts, subject to the terms and conditions of Article XIII below, restrict parking in the Building; (viii) reserve parking spaces for car/van sharing, electric car stations or other purposes to meet the requirements of government agencies; and (x) subject to the terms and conditions of Article XIII below, enforce parking charges (by operation of meters or otherwise). Landlord reserves the right at any time and from time to time to change or alter the location, layout, nature or arrangement of the Common Areas or any portion thereof, including but not limited to the arrangement and/or location of entrances, passageways, doors, corridors, stairs, lavatories, elevators, parking areas, and other public areas of the Building; provided that any future changes do not have a Tenant Adverse Impact. Without limitation, at all times during the Term, Tenant shall have a reasonable means of access from a public street to the Building and Garage.

Landlord shall have the right to close temporarily all or any portion of the Common Areas to such extent as may, in the reasonable opinion of Landlord, be necessary for repairs, replacements or maintenance to the Common Areas, provided such repairs, replacements or maintenance are performed expeditiously and in such a manner so as not to deprive Tenant of access to or use of the Leased Premises. Tenant shall have no rights or expectation under this Lease with respect to the Remaining Project or any portion thereof (including without limitation, any Project Common Areas), including without limitation any right or expectation with respect to the repair, condition, maintenance or existence thereof, except that Landlord shall maintain (or cause others to maintain) the Remaining Project as a first class mixed-use project.

Section 6.03. Tenant's Share of Operating Costs.

A. Commencing on the Term Commencement Date, for each Operating Year, Tenant shall pay to Landlord, in the manner provided herein, an amount (such amount, "**Tenant's Share of Operating Costs**") equal to Tenant's Operating Cost Proportionate Share times the Operating Costs for such Operating Year, provided, however, that for the Operating Years during which the Term begins and ends, Tenant's Share of Operating Costs shall be prorated based upon the actual number of days of the Term during each such Operating Year.

B. Estimated payments on account of Tenant's Share of Operating Costs shall be paid, in advance, without notice, demand, or, except as may be otherwise specifically provided in this Lease, abatement, deduction or set-off, on the first day of each calendar month during the Term, said monthly amounts to be determined on the basis of estimates prepared by Landlord on an annual basis (each an "**Operating Costs Estimate**") and delivered to Tenant prior to the commencement of each Operating Year. If, however, Landlord fails to furnish any such Operating Costs Estimate prior to the commencement of an Operating Year, then (a) until the first day of the month following the month in which such Operating Costs Estimate is furnished to Tenant, Tenant shall pay to Landlord on the first day of each month an amount equal to the monthly sum payable by Tenant to Landlord under this Section 6.03 in respect of the last month of the preceding Operating Year; (b) promptly after such Operating Costs Estimate is furnished to Tenant, Landlord shall give notice to Tenant whether the installments of Tenant's Share of Operating Costs paid by Tenant for the current Operating Year have resulted in a deficiency or overpayment compared to payments which would have been paid under such Operating Costs Estimate, and Tenant, within ten (10) days after receipt of such Operating Costs Estimate, shall pay any deficiency to Landlord and any overpayment shall be credited against future payments of Rent; and (c) on the first day of the month following the month in which such Operating Costs Estimate is furnished to Tenant and monthly thereafter throughout the remainder of the Operating Year, Tenant shall pay to Landlord the monthly payment shown on such Operating Costs Estimate. Landlord may at any time or from time to time (but not more frequently than twice per Operating Year) furnish to Tenant a revised Operating Costs Estimate of Tenant's Share of Operating Costs for such Operating Year, and in such case, Tenant's monthly payments shall be adjusted and paid or credited, as the case may be, substantially in the same manner as provided in the preceding sentence. By not later than one hundred eighty (180) days after the expiration of each Operating Year, Landlord shall deliver to Tenant a statement showing the determination of Tenant's Share of Operating Costs (the "**Reconciliation Statement**"). If such statement shows that the total of Tenant's monthly payments pursuant to

this Section 6.03 exceed Tenant's Share of Operating Costs, then Landlord will credit such refund to the next payment(s) of Rent coming due or, if the same shall be at the end of the Term, refund such monies to Tenant; provided, however, that if Tenant is in Default under this Lease, no such refund shall be made until such Default is cured. If such Reconciliation Statement shows that Tenant's Share of Operating Costs exceeded the aggregate of Tenant's monthly payments pursuant to this Section 6.03 for the applicable Operating Year, then Tenant shall, within thirty (30) days after receiving the statement, pay such deficiency to Landlord without notice, demand, abatement (except as may be otherwise specifically provided in this Lease), deduction or set-off. Each Reconciliation Statement provided by Landlord shall be conclusive and binding upon Tenant unless within one hundred eighty (180) days after receipt thereof, Tenant notifies Landlord that it disputes the correctness thereof, which notice shall identify the particular charge(s) in dispute and the reasons therefor.

C. "**Operating Costs**" means any and all expenses, disbursements and costs relating to or in connection with operating, managing, painting, repairing, insuring, securing and cleaning the Office Portion, or the Building (including without limitation, the Common Areas but excluding the Garage) and allocable to the Office Portion, including, but not limited to, the following (but subject to the Exclusions and without duplication of any costs covered by the Project Costs Charge):

(i) cost of all supplies and materials used, and labor charges incurred, in the operation, maintenance, decoration, repairing and cleaning of the Building, including janitorial service for areas leased to tenants;

(ii) cost of all equipment purchased or rented which is utilized in the performance of Landlord's obligations hereunder, and the cost of maintenance and operation of any such equipment;

(iii) cost of all maintenance and service agreements for the Building, and the equipment therein, including, without limitation, alarm service, security service, window cleaning, and elevator maintenance;

(iv) costs of roof and exterior maintenance (including repainting), repair or, subject to Section 6.03.C(xiii) below, replacement;

(v) wages, salaries and related expenses of all on-site agents or employees engaged in the operation, maintenance, security and management of the Building; provided, however, the wages, salaries and related expenses of any agents or employees not exclusively engaged in the operation, maintenance, security and management of the Building shall be reasonably apportioned;

(vi) cost of all insurance coverage, including self-insurance, for the Building from time to time maintained, including but not limited to the costs of premiums and deductibles for insurance with respect to personal injury, bodily injury, including death, property damage, business interruption, worker's compensation insurance covering personnel and such other insurance as Landlord shall deem reasonably necessary, which insurance may be maintained under policies covering other properties owned by Landlord or in the Project; in which event the premiums therefor shall be reasonably allocated and provided that deductibles

related solely to claims occurring in the Remaining Project shall not be included in Operating Costs;

(vii) cost of repairs, maintenance and, subject to Section 6.03.C(xiii) below and the Exclusions, replacements to the Building, including without limitation the Building Systems;

(viii) cost of any maintenance, repair or redecoration (including repainting) of the Common Areas of the Building and interior landscaping for the Building;

(ix) cost of removal of trash, rubbish, garbage and other refuse from the Building, as well as removal of ice and snow from the sidewalks on or adjacent to the Building;

(x) all charges for electricity, gas, water, sewage service, heating, ventilation and air conditioning and other utilities furnished to the Building;

(xi) management fees; provided, however, that any such management fees shall not exceed three percent (3%) of gross receipts for the Office Portion (exclusive of parking charges, roof license revenues and management fees) for the period in question;

(xii) Intentionally omitted; and

(xiii) annual amounts amortizing only the following items ("**Permitted Capital Expenditures**"): capital expenditures incurred either (A) to the extent reasonably projected by Landlord to reduce Operating Costs by an amount comparable to the annual amortized amount included in Operating Costs, such projection to be made by Landlord based on a study or report (the "**Study**") performed and prepared by a reputable licensed engineer or other reputable, appropriate and licensed (if applicable) professional (a copy of which Study shall, at Tenant's request, be delivered by Landlord to Tenant), or (B) to comply with any Legal Requirements first enacted on or after the Term Commencement Date; provided that the cost of each such capital expenditure shall be amortized over the time period equal to the useful life of the expenditure permitted under generally accepted accounting principles and only that portion attributable to each Operating Year shall be included herein for such Operating Year.

D. In lieu of any other payment in respect of the operating costs relating to or in connection with the operating, managing, painting, repairing, insuring, securing or cleaning any portion of the Project (excluding the Building and Common Areas), including, without limitation, all utility and other costs associated with the Project Common Areas, the amounts (the "**Project Costs Charge**") as set forth below (which amounts, notwithstanding anything to the contrary contained herein, shall be fixed and shall not be multiplied by Tenant's Operating Costs Proportionate Share):

Lease Year	**Annually**	**Monthly**	**Rate Per RSF**
1	$30,590.00	$2,549.17	$0.50
2	$31,354.75	$2,612.90	$0.51
3	$32,138.62	$2,678.22	$0.53
4	$32,942.08	$2,745.17	$0.54

Lease Year	Annually	Monthly	Rate Per RSF
5	$33,765.64	$2,813.80	$0.55
6	$34,609.78	$2,884.15	$0.57
7	$35,475.02	$2,956.25	$0.58
8	$36,361.90	$3,030.16	$0.59
9	$37,270.94	$3,105.91	$0.61
10	$38,202.72	$3,183.56	$0.62
11	$39,157.79*	$3,263.15	$0.64

*Annualized

The Project Costs Charge set forth above shall be payable, as Additional Rent, in equal monthly installments on the first day of each calendar month throughout the Term, concurrently with the payment of the monthly estimated amount of Tenant's Share of Operating Costs. The Project Costs Charge includes all costs of landscaping, snow plowing, security, utility and sewer costs, cleaning and janitorial costs associated with all portions of the Project Common Areas and no such costs shall be included in Operating Costs for the Building. Without limitation, the Project Costs Charge shall not be increased or otherwise impacted by any future Condominium regime affecting all or any portion of the Project.

E. Notwithstanding the above, Operating Costs shall not include (the "**Exclusions**"):

(i) principal and interest on indebtedness, debt amortization, and fixed and percentage ground rent paid by Landlord in connection with any mortgages, deeds of trust or other financing encumbrances, or ground leases of the Building;

(ii) leasing commissions or brokerage fees;

(iii) advertising and promotional expenses;

(iv) costs associated with improving or altering a specific tenant's space in the Building (specifically excluding base building improvements and Building Systems serving tenants generally), unless such items are similarly provided to, or benefit generally, other tenants in the Building;

(v) capital expenditures or depreciation of any kind other than Permitted Capital Expenditures;

(vi) provided Landlord uses commercially reasonable efforts to obtain reimbursement to the extent Landlord is entitled to such reimbursement, and excepting the costs of Landlord's commercially reasonable insurance deductible, the cost of any repair or replacement (including any repair or replacement incurred by reason of fire or other casualty or condemnation) to the extent Landlord is actually reimbursed therefor by insurance, warranties or condemnation proceeds (or for which Landlord would have been reimbursed had Landlord carried the insurance required to be carried by Landlord under this Lease);

(vii) cost of any work or service performed on an extra cost basis for any tenant in the Building or the Land to a materially greater extent or in a materially more favorable manner than furnished generally to the tenants and other occupants;

(viii) the cost of any items to the extent to which such cost is reimbursed or paid by third parties;

(ix) expenditures for any leasehold improvement which is made in connection with the preparation of any portion of the Building for occupancy by any tenant or which is not made generally to or for the benefit of the Building;

(x) Taxes and any expenses incurred in contesting Taxes;

(xi) Costs and expenses incurred in the performance of the Tenant Work, and any costs of any redevelopment or expansion of the Building or the Project;

(xii) Landlord's general overhead and any other expenses not directly attributable to the operation and management of the Building and the Land (e.g. the activities of Landlord's officers and executives or professional development expenditures), including, without limitation, costs and expenses incurred for the administration of the entity which constitutes Landlord, (as the same are distinguished from the costs of operation, management, maintenance and repair of the Building), such as entity accounting and legal matters, except in all cases to the extent included in the management fee permitted hereby;

(xiii) any operating expenses related to the Project (other than the Building), including, without limitation, any amounts, assessments and charges allocated or incurred pursuant to any Condominium Documents, REA, declaration, covenant, easement or other agreements now or hereafter relating to, affecting or encumbering the Building and all or any portion of the Remaining Project, it being agreed that any such expenses are reflected in the Project Costs Charge;

(xiv) direct costs or expenses (including fines, penalties and legal fees) incurred due to the violation by Landlord, its agents, contractors or employees, of any applicable Legal Requirements that would not have been incurred but for such violation;

(xv) fees, costs and expenses incurred by Landlord in connection with or relating to claims against or disputes with tenants of the Building;

(xvi) legal, auditing, consulting and professional fees and other costs paid or incurred in connection with financings, refinancings or sales of any interest in Landlord or of Landlord's interest in the Building, or in connection with any subdivision, condominium or ground lease affecting the Land, Building or Project, including recording costs, mortgage recording taxes, and title insurance premiums;

(xvii) legal fees, space planner's fees, architect's fees, leasing and brokerage commissions, advertising and promotional expenditures and any other marketing expense incurred in connection with the leasing of space in the Building (including new leases, lease amendments, lease terminations and lease renewals), including build out allowances, moving expenses, assumption of rent under existing leases and other concessions incurred in connection with leasing space in the Building;

(xviii) interest, fines or penalties, if any, for late payment or violations of Legal Requirements by Landlord or any tenant except to the extent incurring such expense is caused by a corresponding late payment or violation of a Legal Requirement by Tenant, in which event Tenant shall be responsible for the full amount of such expense;

(xix) wages, bonuses, other compensation, and fringe benefits including, but not limited to insurance plans and tax qualified benefit plans of employees above the grade of general manager;

(xx) any cost representing an amount paid to a person, firm, corporation or other entity related to Landlord that is in excess of the amount which would have been paid in the absence of such relationship (provided however, that this clause shall not apply to the management fee);

(xxi) costs for electricity for plugs, lights and supplemental HVAC supplied to leasable areas of the Building and all costs (including electricity and chilled water costs) to provide a tenant, including Tenant, requested overtime HVAC service to leasable areas of the Building;

(xxii) management or administrative fees of any kind (except for the management fee expressly permitted above in this Section 6.03);

(xxiii) any liabilities, costs or expenses associated with or incurred in connection with the testing, removal, enclosure, encapsulation or other handling of Hazardous Substances (as defined in Section 17.21 below) and the cost of defending against claims in regard to the existence or release of Hazardous Substances at the Building or the Land (except with respect to those costs for which Tenant is otherwise responsible pursuant to the express terms of this Lease); provided however, that with respect to the costs or expenses associated with or incurred in connection with the removal, enclosure, encapsulation or other handling of (a) any material or substance located in the Building on the Term Commencement Date and which, as of the Term Commencement Date, is not considered, as a matter of law, to be a Hazardous Substance, but which is subsequently determined to be a Hazardous Substance as a matter of law, and (b) any material or substance located in the Building after the Term Commencement Date and which, when placed in the Building, was not considered, as a matter of law, to be a Hazardous Substance, but which is subsequently determined to be a Hazardous Substance as a matter of law, the costs thereof may be included in Operating Costs, subject, however, to Section 6.03.C(xiii), to the extent that such cost is treated as a Permitted Capital Expenditure;

(xxiv) increased insurance or Taxes assessed specifically to any tenant of the Building or the Land for which Landlord is entitled to reimbursement from any other tenant;

(xxv) any costs or expenses incurred in connection with the enforcement of Landlord’s Warranty (as hereinafter defined);

(xxvi) lease payments for rental equipment (other than equipment for which depreciation is properly charged as an expense) that would constitute a capital expenditure if the equipment were purchased to the extent that such lease payments exceed the amount which would have been included in Operating Expenses if such equipment had been purchased rather than leased;

(xxvii) cost of acquiring paintings and other works of art (as opposed to decorations purchased or leased by Landlord for display in the Common Areas of the Building);

(xxviii) taxes on Landlord's business (such as income, excess profits, franchise, capital stock, estate, inheritance, etc.);

(xxix) charitable or political contributions;

(xxx) reserve funds of any kind;

(xxxi) all other items for which another party compensates or pays so that Landlord shall not recover any item of cost more than once;

(xxxii) penalties, legal fees, court costs and costs incurred in connection with dispute resolution procedures resulting from any claimed violation of law or requirements of law, except to the extent attributable to Tenant's actions or inactions;

(xxxiii) costs of providing any shuttle service to the Building or the Project unless required by Law or Tenant agrees in writing with Landlord to participate in the use of such shuttle service;

(xxxiv)the cost of installing any specialty service, such as a cafeteria, observatory, broadcasting facilities, child or daycare;

(xxxv) costs incurred in removing the property of former tenants or other occupants of the Building;

(xxxvi) Costs of HVAC service (including any and all utilities) supplied to leasable areas of the Building (including vacant space) and which Landlord is required, pursuant to this Lease, to separately meter, submeter or BTU meter for HVAC service;

(xxxvii) costs of mitigation or impact fees or subsidies (however characterized), imposed or incurred prior to the date of the Lease or imposed or incurred solely as a result of another tenant’s or tenants’ use of the Land or their respective premises;

(xxxviii) costs relating to the repair, maintenance and operation of the Garage;

(xxxix) costs and expenses incurred in the design, permitting or initial construction, fixturing and furnishing of the Building, including the Garage and any Common Areas of Project Common Areas;

(xl) cost of initial cleaning and rubbish removal from the Building performed (or to be performed) before final completion of the Building or any tenant space, to the extent such costs relate to the construction of the Building or tenant space;

(xli) cost of initial landscaping of the Building or the Project;

(xlii) cost of the initial stock of tools and equipment for operation, repair and maintenance of the Building or the Project;

(xliii) the cost of repairs and replacements incurred by reason of fire or other casualty, or condemnation other than the costs of Landlord’s commercially reasonable deductible (irrespective of whether Landlord, in fact, carries insurance against such risk);

(xliv) any costs of operating, insuring, repairing, maintaining, managing or replacing the Garage; and

(xlv) direct costs due to the gross negligence or willful misconduct of Landlord, its employees, agents, contractors or vendors.

F. If for any period during the Term less than ninety-five percent (95%) of the Floor Area of the Office Portion is occupied by tenants, then, in calculating Operating Costs that vary based upon occupancy for such period, Landlord may increase those components of Operating Costs that vary based upon occupancy that Landlord reasonably believes would have been incurred during such period had the Building been ninety-five percent (95%) occupied. In addition, if for any period during the Term any part of the Office Portion is leased to a tenant who, in accordance with the terms of its lease, provides its own cleaning services, and/or any other services otherwise included in Operating Costs, then Operating Costs for such period shall be increased by the additional costs for cleaning, and/or such other applicable expenses that Landlord reasonably estimates would have been incurred by Landlord if Landlord had furnished and paid for cleaning and/or such other services for the space occupied by such tenant.

G. Notwithstanding anything to the contrary contained herein, in no event shall the amount of Controllable Operating Costs (as hereinafter defined) included in Operating Costs for any Operating Year after the first (1st) full Operating Year (or portion thereof) during the Term exceed the Controllable Operating Costs Cap (as hereinafter defined). "**Controllable Operating Costs**" shall be defined as all Operating Costs, except for utility and other energy related costs, amortization of capital expenditures, snow and ice removal, security costs, cleaning costs, and insurance premiums. The initial "**Controllable Operating Costs Cap**" shall be defined as one hundred three percent (103%) of the actual amount of Controllable Operating Costs for the first (1st) Operating Year (or portion thereof) during the Term, and each Controllable Operating Costs Cap thereafter shall be one hundred three percent (103%) of the Controllable Operating Costs Cap for the immediately preceding calendar year.

Section 6.04. Tenant's Right to Examine Records.

Subject to the provisions of this Section 6.04, Tenant shall have the right, at Tenant's cost and expense, to examine all documentation and calculations prepared in the determination of Tenant's Share of Operating Costs:

A. Tenant shall have the right to make such examination no more than once in respect of any period in which Landlord has given Tenant a Reconciliation Statement. Tenant shall have no right to examine all documentation and calculations pursuant to this Section 6.04 unless Tenant has paid the amount shown on the applicable Reconciliation Statement. Tenant shall exercise such right by giving Landlord written notice (the "**Documentation Request**") no more than ninety (90) days after Landlord gives Tenant a Reconciliation Statement, in respect of such period (the "**Documentation Request Due Date**").

B. Such documentation and calculations shall be made available to Tenant at the offices where Landlord keeps such records in Massachusetts during normal business hours within a reasonable time after Landlord receives a Documentation Request. Landlord shall notify Tenant (the "**Documentation Availability Notice**") when such documents and calculations are available for examination.

C. Such examination (the "**Examination**") may be made only by a nationally or regionally recognized independent certified public accounting firm (a "**Major CPA Firm**"), or by another certified public accounting firm or real estate services firm (including a brokerage firm that provides operating expense auditing services) reasonably approved by Landlord. In no event shall Tenant use any examiner who is being paid by Tenant on a contingent fee basis.

D. As a condition to performing any such Examination, Tenant and its examiner(s) shall be required to execute and deliver to Landlord an agreement, in commercially reasonable form acceptable to Landlord, agreeing to keep confidential any information which it discovers about Landlord, the Building or the Project in connection with such examination; provided however, Tenant shall have the right to make disclosures (i) to the extent required by Legal Requirements, (ii) to the extent reasonably required to enforce its rights hereunder, and (iii) to the partners, employees, architects, consultants, brokers, lenders, accountants, attorneys and other consultants of Tenant who have been advised of the confidentiality provisions contained herein and agree to be bound by the same.

E. The Examination shall be commenced within thirty (30) days after Landlord delivers the documentation and calculation and shall be concluded within ninety (90) days of its commencement. Tenant shall provide Landlord with a written report (the "**Report**") from its examiner summarizing the results of the Examination not later than one hundred eighty (180) days after Tenant completes the Examination (the "**Report Due Date**").

F. If as a result of its investigations, Tenant disagrees with the Reconciliation Statement, Landlord and Tenant shall negotiate in good faith for thirty (30) days (the "**Operating Costs Negotiation Period**") to agree on a resolution. If Landlord and Tenant have not agreed on a resolution within the Operating Costs Negotiation Period, then either party may refer the issues raised by such audit to an independent nationally recognized public accounting firm selected by Landlord and reasonably acceptable to Tenant, and the decision of such accountants shall be conclusively binding upon Landlord and Tenant.

G. If, after the Examination with respect to any calendar year, it is finally determined that: (a) Tenant has made an overpayment on account of Tenant's Share of Operating Costs, Landlord shall credit such overpayment against the next installment(s) of Minimum Rent thereafter payable by Tenant, except that if such overpayment is determined after the termination or expiration of the Term, Landlord shall promptly refund to Tenant the amount of such overpayment less any amounts then due from Tenant to Landlord; or (b) Tenant has made an underpayment on account of Tenant's Share of Operating Costs, Tenant shall, within thirty (30) days of such determination, pay such underpayment to Landlord. If it is finally determined that the amount of Operating Costs was overstated by more than five percent (5%), Landlord shall pay Tenant's reasonable out-of-pocket cost for such audit (not to exceed $10,000.00).

H. Time is of the essence of the provisions of this Section 6.04. Should Tenant fail to give Landlord the Documentation Request by the Documentation Request Due Date, or the Report by the Report Due Date, then in any such case Tenant shall have no further right to question said Operating Costs, and the amounts shown on Landlord's Operating Costs Statement shall be final as between the parties.

Section 6.05. Taxes on Tenant's Personal Property.

Tenant shall pay all governmental taxes, charges, fees and assessments applicable to Tenant's personal property, trade fixtures, inventory and Tenant's Rent obligation before they become delinquent.

ARTICLE VII

SERVICES AND UTILITIES

Section 7.01 Services Provided by Landlord.

So long as Tenant is not in Default under this Lease, Landlord shall provide the following facilities and services to Tenant as part of Operating Costs (except as otherwise provided herein):

A. Electricity for normal lighting and business purposes in the Leased Premises and the Common Areas. Electricity supplied to the Leased Premises shall be not less than six (6) watts per usable square foot of the Leased Premises (exclusive of the HVAC Service);

B. Janitorial service and trash removal services in the Leased Premises and the Common Areas after Building Hours each day except on Saturdays, Sundays and Holidays, in accordance with the cleaning specifications attached hereto as Exhibit G;

C. Common Area rest room facilities and necessary lavatory supplies, including hot and cold running water at the points of supply in such rest room facilities, cold water for ordinary premises, cleaning, toilet, lavatory and drinking purposes, as provided for the general use of all tenants in the Building at the point of supply, and routine maintenance, painting, and electric lighting service for all Common Areas of the Building in such manner as Landlord deems reasonable. After Landlord's initial installation of hot water heaters to supply hot water to the Premises as part of the Tenant Work, Tenant shall be responsible for heating and distributing any hot water within the Leased Premises, and any repairs, maintenance and replacement of the hot water heaters serving the Premises. If Tenant requires water for any additional purposes, Tenant shall pay for the cost of bringing water to, and redistributing water within, the Leased Premises, and Landlord may install a meter to measure the water. Tenant shall pay the cost of such installation, and for all maintenance, repairs and replacements thereto, and for the reasonable charges of Landlord for the water consumed.

D. Central heating, ventilation and air conditioning ("**HVAC Service**") during the seasons of the year when these services are normally and usually furnished based upon standard electrical energy requirements of not more than an average of six (6) watts per square foot of the Leased Premises and a human occupancy of not more than one person for each 150 square feet of rentable area of the Leased Premises (other than in special use areas) for all purposes, in accordance with the specifications set forth on Exhibit H attached hereto. The HVAC Service shall include the provision of chilled and/or condenser water to the extent necessary to provide the HVAC Service. The controls for the HVAC Service to the Leased Premises shall be in the Leased Premises, and Tenant shall have the ability to get HVAC Service to the Leased Premises 24 hours per day, 7 days per week on demand, subject to payment of the HVAC Charge, as hereinafter defined;

E. Automatically operated passenger elevator service. Landlord shall have the right to remove elevators from service as the same shall be required for moving freight, or for servicing or maintaining the elevators and/or the Building; provided, however, that, except in the event of a Force Majeure or due to emergencies, at least three (3) passenger elevators will remain in service during Business Hours and at least one (1) passenger elevator will remain in service at all other times.

F. All electric bulbs and fluorescent tubes for building standard light fixtures in the Leased Premises and Common Areas;

G. An electronically controlled perimeter access system to the Building's entrance, and other security services as Landlord shall determine from time to time. Landlord's current security specifications are attached hereto as Exhibit E. Landlord shall provide Tenant with Building key cards for each of Tenant's employees working in the Leased Premises from time to time. Any additional or replacement cards shall be at Tenant's expense; and

H. Loading dock services and vertical transportation for freight to the Leased Premises.

I. So long as Tenant shall comply with Landlord's reasonable security program for the Building, Landlord shall provide Tenant with, and Tenant shall have, access to the Leased Premises twenty-four (24) hours per day, seven (7) days per week, during the Term of this Lease, except in an emergency.

J. Tenant may elect, at its sole cost and expense, to install supplementary or auxiliary HVAC equipment to serve the Leased Premises, subject to Landlord's prior consent in each instance. The work to install any supplementary or auxiliary HVAC equipment shall be considered to be a Tenant Alteration for all purposes under this Lease and Tenant shall comply with all terms and conditions of this Lease in connection therewith. Tenant shall also install a meter (the "**Condenser Water Meter**") to measure Tenant's use of chilled and/or condenser water in connection with any such supplementary or auxiliary HVAC equipment. Landlord will, upon request of Tenant and subject to availability, provide chilled and/or condenser water for such supplemental or auxiliary HVAC equipment. If Landlord provides any chilled or condenser water to Tenant in connection with the use of any supplementary or auxiliary HVAC equipment, Landlord may elect to charge Tenant for the use of such chilled or condenser water based on the amounts shown on such Condenser Water Meter, which charge will be based on Landlord's actual costs of providing chilled and/or condenser water, without mark-up.

Section 7.02. Landlord's Access to Leased Premises.

Landlord shall have access to and reserves the right to inspect, erect, use, connect to, maintain and repair pipes, ducts, conduits, cables, plumbing, vents and wires, and other facilities in, to and through the Leased Premises as and to the extent that Landlord may now or hereafter deem to be necessary or appropriate for the proper operation and maintenance of the Building (including the servicing of other tenants in the Building), provided the same do not materially reduce the useable square footage or materially adversely affect the appearance of the Leased Premises, and the right at all times to transmit water, heat, air conditioning and electric current through such pipes, conduits, cables, plumbing, vents and wires and the right to interrupt the same in emergencies without eviction of Tenant or abatement of Rent, except as may be

expressly set forth herein. Any failure by Landlord to furnish the foregoing services shall not render Landlord liable in any respect for damages to either person or property, nor be construed as an eviction of Tenant, nor cause an abatement of Rent hereunder, nor relieve Tenant from any of its obligations hereunder. If any public utility or governmental body shall require Landlord or Tenant to restrict the consumption of any utility or reduce any service for the Leased Premises or the Building, Landlord and Tenant shall comply with such requirements, whether or not the utilities and services referred to in this Article VII are thereby reduced or otherwise affected, without any liability on the part of Landlord to Tenant or any other person or any reduction or adjustment in Rent payable hereunder. Landlord and its agents shall be permitted reasonable access to the Leased Premises for the purpose of inspecting the Leased Premises, and installing and servicing systems within the Leased Premises deemed reasonably necessary by Landlord to provide the services and utilities referred to in this Article VII to Tenant and other tenants in the Building. In addition, Landlord may enter the Leased Premises for purposes of showing the Leased Premises to Mortgagees or prospective Mortgagees at any time during the Term and to prospective tenants during the last twelve (12) months of the Term. Notwithstanding anything to the contrary contained herein, in connection with any entry by Landlord into the Leased Premises (including entry for the reasons described in preceding sentence) except in the case of an emergency or for routine access such as for cleaning: (i) Landlord shall use commercially reasonable efforts to minimize any interruption of or interference with Tenant's use and occupation of the Leased Premises; (ii) Landlord shall provide Tenant with at least twenty-four (24) hours' advance notice (which notice may be oral or via email) of such entry (or in the case of an emergency, only such notice as is practicable under the circumstances shall be required), and (iii) Tenant shall have the right to have a representative accompany Landlord during any entry.

Section 7.03. Electrical Energy.

As part of the Tenant Work, Landlord shall cause a separate direct meter to be installed in the Leased Premises to monitor the amount of electricity used to operate the lights and any equipment, machinery or other items connected to the power outlets in the Leased Premises. The cost of all electricity furnished to the Leased Premises will be billed to Tenant directly from the appropriate utility company furnishing such electricity. Tenant shall promptly pay all bills for such service. Tenant shall maintain in good order and repair (and replace, if necessary) the separate meter serving the Leased Premises. Landlord shall be under no obligation to furnish electrical energy to Tenant in amounts greater than needed for lighting and normal and customary items of equipment for general office purposes (i.e., not more than an average of six (6) watts per square foot of the Leased Premises, exclusive of the HVAC Service), and Tenant shall not install or use within the Leased Premises any electrical equipment, appliance or machine which shall require amounts of electrical energy exceeding such standard wattage provided for the Building, unless the installation and use of such additional electrical equipment, appliance, or machine has been approved by Landlord, which approval may be conditioned upon the payment by Tenant, as Additional Rent, of the cost of the additional electrical energy and modifications to the Building's electrical system required for the operation of such electrical equipment, appliance or machine. Landlord shall have the right to charge Tenant for the cost of any additional wiring or other improvements to the Building as may be occasioned by or required as a result of any such excess use. In the event of any excessive consumption of any utilities that

are not separately metered or submetered for the Leased Premises, Landlord shall be entitled to require that Tenant install in the Leased Premises (at Tenant's cost and in a location approved by Landlord) meters or submeters to measure Tenant's utility consumption for the Leased Premises or for any specific equipment causing excess consumption, as Landlord shall require; in which case, Tenant shall maintain in good order and repair (and replace, if necessary) such meters or submeters. If separate meters are installed for measuring Tenant's use of any utilities, then charges for such utilities shall be paid directly by Tenant to the appropriate utility company. If submeters are installed for measuring Tenant's consumption of any utilities, Tenant shall pay the costs of the same to Landlord as Additional Rent, within fifteen (15) days of its receipt of a bill therefor based on such submeter readings.

Section 7.04. HVAC Charge.

Landlord shall install (as part of the Tenant Work) and maintain, at Tenant's cost, one or more air flow and BTU meters to measure Tenant's use of HVAC Service (which includes chilled, hot and condenser water, as well as supply and exhaust on the air) in the Leased Premises. Tenant shall pay, as Additional Rent, a charge ("**HVAC Charge)** for natural gas consumption in the Leased Premises, which HVAC Charge shall be based on the amounts shown on such submeter(s), plus any third-party out-of-pocket fee applicable for reading, maintaining and/or replacing said submeters. Tenant's HVAC Charge shall be based on Landlord's actual costs of providing the HVAC Service, without mark-up. It is the intent of the parties that Tenant's HVAC Charge is separate from and in addition to Tenant's Share of Operating Costs, as set forth in Section 6.03 of this Lease.

Tenant agrees to pay Tenant's HVAC Charge in equal monthly installments commencing on the Term Commencement Date and on the first day of each calendar month thereafter throughout the Term. Such installments shall be based on Landlord's reasonable estimate of Tenant's usage and the actual costs incurred by Landlord (as described and limited above) as reflected on a monthly invoice provided by Landlord or its designee. Within one hundred eighty (180) days after the end of each partial or full calendar year, Landlord shall send to Tenant a statement setting forth the amount of Tenant's share based on Tenant's actual usage of HVAC Service for the partial or full calendar year in question and the sum of the HVAC Charge estimates that have been paid by Tenant. If the amount of Tenant's HVAC Charge exceeds the sum of the HVAC Charge estimates paid by Tenant for such period, Tenant shall pay Landlord the difference within thirty (30) days after receipt of such statement. If the sum of the HVAC Charge estimates paid by Tenant for such period exceeds Tenant's HVAC Charge for such period, Landlord shall credit the difference toward the Rent next due and, at the end of the Term, refund any excess amount of HVAC Charge estimates paid by Tenant, less the amount of any moneys owed to Landlord by Tenant. Landlord shall provide Tenant with a copy of the submeter readings and any other backup documentation used to calculate the HVAC Charge promptly following Tenant's request therefor.

Section 7.05. Discontinuance and Interruption of Service.

A. Landlord shall not be liable to Tenant in damages or otherwise for the quality, quantity, failure, unavailability or disruption of any utility service and the same shall not constitute a termination of the Lease, or an actual or constructive eviction of Tenant, or, subject to the terms and conditions of Section 7.05(B) below, entitle Tenant to any abatement of Rent.

B. Notwithstanding anything to the contrary in this Lease contained, if the Leased Premises shall lack the HVAC Service, electrical service, water and sewer service, all elevator service, or all reasonable means of access to the Leased Premises, and which Landlord is required to provide hereunder (thereby rendering all or a Material Portion (as hereinafter defined) of the Leased Premises untenantable), or if Landlord fails to perform any repairs or maintenance that Landlord is required to perform pursuant to the terms of this Lease, and such failure renders all or a Material Portion of the Leased Premises untenantable or inaccessible (in any case, a "**Service Interruption**") so that, for the Landlord Service Interruption Cure Period, as hereinafter defined, the continued operation in the ordinary course of Tenant's business is materially adversely affected as a direct result of such Service Interruption, then, provided that Tenant actually ceases to use the Leased Premises (or Material Portion thereof) during the entirety of the Landlord Service Interruption Cure Period and that such Service Interruption and/or Landlord's inability to cure such condition is not caused by the fault or neglect of Tenant or Tenant's agents, employees or contractors, then Minimum Rent, Tenant's Share of Operating Costs, Tenant's Share of Taxes and the Project Costs Charge shall thereafter be abated for the Leased Premises (or Material Portion thereof) on a pro rata per rentable square foot and per diem basis until such condition is cured sufficiently to allow Tenant to reoccupy the Leased Premises (or Material Portion thereof) and the continued operation in the ordinary course of Tenant's business is no longer materially adversely affected as a direct result of such Service Interruption. For the purposes hereof, (i) the term "**Landlord Service Interruption Cure Period**" shall be defined as five (5) consecutive business days after Landlord's receipt of Notice from Tenant of the condition causing the Service Interruption in the Leased Premises, provided however, that the Landlord Service Interruption Cure Period shall be ten (10) consecutive business days after Landlord's receipt of Notice from Tenant of such condition causing the Service Interruption in the Leased Premises if either the condition was caused by causes beyond Landlord's control or Landlord is unable to cure such condition as the result of causes beyond Landlord's control, and (ii) the term "**Material Portion**" shall mean ten percent (10%) or more of the rentable area of the Leased Premises.

Section 7.06. Landlord's Right to Alter Utilities.

Landlord may at any time alter or permit to be altered any utility, and related equipment, serving the Leased Premises, provided such alteration does not interrupt or reduce service to the Leased Premises to more than a de minimis extent, does not interfere with or adversely affect Tenant's business operations within the Leased Premises to more than a de minimis extent, and does not cause the usable area of the Leased Premises or its ceiling heights to be reduced beyond a de minimis amount.

ARTICLE VIII

INDEMNITY AND INSURANCE

Section 8.01. Indemnity.

A. Tenant shall indemnify, defend and hold Landlord, its lessors, partners and members, and their respective shareholders, partners, members, trustees, agents, representatives, directors, officers, employees and Mortgagee(s) (collectively, "**Landlord's Indemnitees**") harmless from and against all liabilities, obligations, damages, judgments, penalties, claims,

costs, charges and expenses, including reasonable attorneys' fees, which may be imposed upon, incurred by, or asserted against any of Landlord's Indemnitees by a third party and arising, directly or indirectly, out of or in connection with (i) Tenant's breach of its obligations under this Lease, (ii) the wrongful acts or negligence of Tenant or any Person claiming by, through or under Tenant, or the agents, contractors, employees, servants or licensees of any such Person, in, on or about the Leased Premises or the Building, or (iii) the use or occupancy of the Leased Premises or the Building by Tenant or any of Tenant's agents, employees, contractors or invitees. Tenant shall not be obligated to indemnify Landlord's Indemnitees against loss, liability, damage, cost or expense to the extent arising out of (a) a claim for which Tenant is released from liability pursuant to Section 8.07 below, or (b) a claim arising out of the willful misconduct or negligence of Landlord or its agents, employees or contractors.

B. Landlord shall indemnify, defend and hold Tenant, its partners, officers, shareholders, members, trustees, principals, agents, directors and employees (collectively "**Tenant's Indemnitees**") harmless from and against all liabilities, obligations, damages, penalties, claims, costs, charges and expenses, including reasonable attorneys' fees, which may be imposed upon, incurred by, or asserted against any of the Tenant's Indemnitees by a third party and arising, directly or indirectly, out of or in connection with (i) Landlord's breach of its obligations under the Lease, (ii) the wrongful acts or negligence of Landlord or any Person claiming by, through or under Landlord, or the agents, contractors, servants, employees and/or licensees of any such Person in, on or about the Common Areas, or (iii) the use of the Common Areas. Landlord shall not be obligated to indemnify Tenant's Indemnitees against loss, liability, damage, cost or expense to the extent arising out of (a) a claim for which Tenant is released from liability pursuant to Section 8.07 below, or (b) a claim arising out of the willful misconduct or negligence of Tenant or its agents, employees or contractors.

Section 8.02. Landlord Not Responsible for Acts of Others.

To the extent permitted by applicable Legal Requirements, Landlord shall not be liable to Tenant, nor to those claiming through Tenant, for any loss, theft, injury, liability or damage of, for or to Tenant's business and/or property which may result from: (a) any act, omission, fault or negligence of other tenants or licensees, their agents, employees or contractors, or any other persons (including occupants of adjoining or contiguous buildings, owners of adjacent or contiguous property, or the public), (b) the breaking, bursting, backup, stoppage or leaking of electrical or phone/internet cables and wires, or water, gas, sewer, HVAC or steam pipes or ducts serving the Leased Premises, the Building and/or the Project, and/or (c) water, snow or ice being upon the Building or the Project or coming into the Leased Premises.

Section 8.03. Tenant's Insurance.

Commencing on the earlier to occur of (a) the Term Commencement Date or (b) the date Tenant enters or has access to enter the Leased Premises, for purposes of installing alterations or equipment therein, and at all times thereafter, Tenant shall carry and maintain:

A. Commercial General Liability Insurance (a non-deductible policy with current ISO occurrence form or equivalent) naming Tenant as the named insured and Landlord and (at Landlord's request) Landlord's Mortgagee (and managing agent), if any, Landlord's property manager, if any, and Federal Realty Investment Trust ("**FRIT**"), if FRIT is not the

Landlord under this Lease, as additional insureds, providing an Additional Insured – Managers or Lessors of Premises Endorsement (#CG-20-11-01-96 or equivalent) protecting Tenant and the additional insureds against liability for bodily injury, death and property damage with respect to liability arising out of the ownership, use, occupancy or maintenance of the Leased Premises and all areas appurtenant thereto, with limits not less than a per occurrence limit of Three Million Dollars ($3,000,000.00) and a general aggregate limit of Five Million Dollars ($5,000,000.00). These policy limits may be obtained through any combination of primary and excess insurance. If Tenant sells, serves or distributes alcoholic beverages in or on the Leased Premises, then such General Liability Insurance shall include Liquor Legal Liability coverage at the same minimum limits of liability as shown above. If Tenant engages a third party to sell, serve or distribute food in or on the Leased Premises, then Tenant's contractor shall maintain General Liability Insurance including products liability with a combined single limit of Two Million Dollars ($2,000,000.00) per occurrence and an aggregate limit of Two Million Dollars ($2,000,000.00).

B. "All Risks" or "Special Causes of Loss Form" property insurance covering all of Tenant's Property and Leasehold Improvements (as both are defined in Section 9.05. below), and coverage for those building components for those portions of the Leased Premises that Tenant is responsible to repair pursuant to Section 10.02. below (exclusive of any Building Systems or other portions of the base Building), and written for at least the full replacement cost with a deductible of not more than Fifty Thousand Dollars ($50,000.00), subject to commercially reasonable increases during the Term consistent with market deductibles for office space in the greater Boston market area.

C. Plate glass insurance covering all plate glass in the Leased Premises. Tenant shall be and remain liable for the repair and restoration of all such plate glass, provided, however, Tenant may self-insure such plate glass coverage.

D. Intentionally Omitted.

E. Business interruption, loss of income and extra expense insurance in amounts sufficient to pay for Tenant's expenses and lost income for a period of at least twelve (12) months.

F. Worker's compensation insurance as required by the jurisdiction in which the Leased Premises is located, and employer's liability insurance with a minimum of Five Hundred Thousand Dollars ($500,000.00). Such policy shall provide a waiver of subrogation in favor of all Landlord and Landlord's managing agent.

Notwithstanding anything set forth above, all dollar limits specified in this Section 8.03 shall be increased from time to time, consistent with the standards of other comparable office buildings in the area in which the Building is located, upon Notice from Landlord, to effect or coverage deemed adequate in light of then-existing circumstances.

Section 8.04. Tenant's Contractor's Insurance.

Tenant shall cause any contractor performing work on the Leased Premises to obtain, carry and maintain, at no expense to Landlord the following coverages with limits not less than indicated: (i) worker's compensation insurance as required by the jurisdiction in which the Building is located and employer's liability with limits not less than Five Hundred Thousand

Dollars ($500,000.00) providing a waiver of subrogation in favor of Landlord, Federal Realty Investment Trust, if FRIT is not the Landlord, and Landlord's managing agent (if applicable); (ii) builder's risk insurance with a deductible no greater than Ten Thousand Dollars ($10,000.00), in the amount of the full replacement cost of Tenant's Property and Leasehold Improvements; (iii) Commercial General Liability Insurance, including completed operations and contractual liability coverage, providing on an occurrence basis limits not less than Three Million Dollars ($3,000,000.00) per occurrence (and Five Million Dollars ($5,000,000.00) general aggregate, if applicable), naming Landlord, Federal Realty Investment Trust, if FRIT is not the Landlord, and Landlord's managing agent (if applicable) as additional insureds using the current ISO Additional Insured Endorsement forms CG 20 38 for ongoing operations and CG 20 37 for completed operations or their equivalent providing coverage at least as broad; and (iv) business automobile liability insurance including the ownership, maintenance and operation of the automotive equipment, owned, hired, and non-owned coverage with a combined single limit of not less than One Million Dollars ($1,000,000.00) for bodily injury and property damage. If the contractor fails to acquire such insurance, Tenant shall provide such insurance (except worker's compensation insurance and employer's liability). These policy limits may be obtained through any combination of primary and excess insurance.

Section 8.05. Policy Requirements.

Any company writing any insurance which Tenant is required to maintain or cause to be maintained under Sections 8.03 and 8.04 as well as any other insurance pertaining to the Leased Premises or the operation of Tenant's business therein (all such insurance being referred to as "**Tenant's Insurance**") shall at all times be licensed and qualified to do business in the jurisdiction in which the Leased Premises are located and shall have received an A-VII or better rating by the latest edition of A.M. Best's Insurance Rating Service. All of Tenant's Insurance may be carried under a blanket policy covering the Leased Premises and any other location of Tenant. To the extent such a provision is then available from Tenant's insurer, such insurance shall provide that it shall not be canceled or the coverages be changed or reduced below the minimum amounts and coverages required under this Lease without at least thirty (30) days' (ten (10) days' in the event of cancellation for non-payment of premium) prior written Notice to Landlord and, in any event, Tenant shall provide Landlord with at least thirty (30) days' prior written notice of any such cancellation or reduction in the amounts or types of such insurance below the minimum amounts and coverages required under this Lease. Tenant shall be solely responsible for payment of premiums for all of Tenant's Insurance. Tenant shall deliver to Landlord prior to the time Tenant's Insurance is first required to be carried by Tenant, and upon renewals prior to the expiration of the term of any such insurance policy, a certificate of insurance. The limits of Tenant's Insurance shall not limit Tenant's liability under the Lease, at law, or in equity. All policies of Tenant's Insurance shall be primary and non-contributory with respect to Landlord's liability arising out of the act or omission of Tenant, its officers, agents, contractors, employees, or, while upon the Leased Premises, invitees. If Tenant fails to deposit a certificate of insurance with Landlord (which shows compliance with the provisions of this Article VIII) within three (3) days after Notice from Landlord, Landlord may acquire such insurance, and Tenant shall pay Landlord the amount of the premium applicable thereto within thirty (30) days following Notice from Landlord.

Neither the insurance requirements set forth in the Lease nor Landlord's review and approval of any insurer or insurance policy shall be deemed to limit Tenant's obligations under this Lease or Tenant's underlying liability in any manner. The insurance requirements herein merely prescribe the minimum amounts and forms of insurance coverage that Tenant and their contractors are required to carry. Any failure by Landlord to enforce in a timely manner any of the provisions of the Lease shall not act as a waiver to enforcement of any of such provisions at a later date.

Section 8.06. Increase in Insurance Premiums.

Tenant shall not keep or do anything in the Leased Premises that will: (i) cause an increase in the rate of any insurance on the Building; (ii) violate the terms of any insurance coverage on the Building carried by Landlord or any other tenant; (iii) prevent Landlord from obtaining such policies of insurance acceptable to Landlord or any Mortgagee of the Building; or (iv) violate the rules, regulations or recommendations of Landlord's insurers, loss prevention consultants, safety engineers, the National Fire Protection Association, or any similar body having jurisdiction over the Leased Premises. If Tenant does so, Tenant shall pay to Landlord upon demand the amount of any increase in any such insurance premium. In determining the cause of any increase in insurance premiums, the schedule or rate of the organization issuing the insurance or rating procedures shall be conclusive evidence of the items and charges which comprise the insurance rates and premiums on such property.

Section 8.07. Waiver of Right of Recovery and Subrogation.

Except for the indemnification for Hazardous Substances as set forth in Section 17.21, neither Landlord nor Tenant shall be liable to the other party or to any insurance company (by way of subrogation or otherwise) insuring such other party for loss or damage to any building, structure or other tangible property in or at the Leased Premises, the Building or the Project, or any resulting loss of income, or losses under worker's compensation laws or benefits, even though such loss or damage might have been occasioned by the negligence of Landlord or Tenant, or their respective managing agents or employees. This Section 8.07 shall not limit or supersede the indemnification as to third parties as provided in Section 8.01. The provisions of this Section 8.07 shall apply to any Transferee pursuant to Article XV of this Lease, and the Transferee shall expressly agree in writing to be bound by the provisions of this Section 8.07 (as if such Transferee were Tenant hereunder) for the benefit of Landlord.

Section 8.08. Landlord's Insurance.

Landlord shall maintain (i) "all risk" or "special causes of loss form" property insurance insuring the structural components of the Building, to the extent of the full replacement value of such Building, and insuring the Common Areas of the Building, and (ii) Commercial General Liability Insurance (ISO form or equivalent) with limits not less than Five Million Dollars ($5,000,000.00) per occurrence and Five Million Dollars ($5,000,000.00) annual aggregate (and such coverage may be achieved by a combination of CGL and Umbrella liability policies). Provided the insurance coverage carried by Landlord pursuant to (i) above shall not be reduced or otherwise adversely affected, all of Landlord's insurance may be carried under a blanket policy covering the Building and any other property owned, leased or operated by Landlord or its

affiliates, provided the insurance requirements in this Lease are fulfilled and the insurance coverage is not diminished in any way.

ARTICLE IX

CONSTRUCTION AND ALTERATIONS

Section 9.01. Condition of Leased Premises Upon Delivery.

Tenant acknowledges that (i) upon delivery of possession of the Leased Premises by Landlord to Tenant with the Tenant Work substantially completed, Tenant accepts the Leased Premises, and all improvements, betterments and equipment "AS IS," with no representation or warranty by Landlord as to the condition or suitability of the Leased Premises or of the Building for Tenant's purpose; and (ii) Landlord has no obligation to improve or repair the Leased Premises, or the Building, except as may be specifically set forth in this Lease (including Exhibit B); provided, however, that the foregoing shall in no way limit or detract from Landlord's ongoing repair and maintenance obligations set forth in this Lease, or Landlord's obligation to complete any punch list items in connection with the Tenant Work or the satisfaction of Landlord's Warranty. As of the Term Commencement Date, the Building Systems serving the Leased Premises shall be in good working order, and the Leased Premises shall be delivered in broom-clean condition, free of personal property, debris, construction materials, Hazardous Substances and other occupants and in compliance with all Legal Requirements in all material respects. Without limitation, as of the Term Commencement Date, the Leased Premises, including, without limitation, the Tenant Work, shall be in compliance with all applicable Legal Requirements in all material respects.

Section 9.02. Tenant Improvements.

Landlord and Tenant, at their respective sole cost and expense, agree to provide all improvements to the Leased Premises in accordance with their respective obligations set forth in Exhibit B.

Section 9.03. Alterations.

Tenant shall not make or cause or permit to be made any alterations, additions, renovations, improvements or installations in or to the Leased Premises ("**Tenant Alterations**") without Landlord's prior consent, which such consent shall not be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, Tenant shall in no event make or permit to be made any structural alterations, alterations, modifications or substitutions which are visible outside of the Leased Premises or the Building, or any alterations, modification, substitution or other change which can reasonably be expected to adversely affect the Building Systems within or serving the Leased Premises without Landlord's prior written consent, which such consent may be granted or withheld in Landlord's sole and absolute discretion. In connection with any Tenant Alterations approved by Landlord, Tenant shall pay Landlord a construction management fee as follows: (i) for and with respect to any Tenant Alterations that cost $250,000 or less, Tenant shall not be required to pay any construction management fee, (ii) for and with respect to any Tenant Alterations that cost more than $250,000 and less than $1,000,000, Tenant shall pay to Landlord a construction management fee equal to one percent (1%) of the total costs of such Tenant Alterations, and (iii) for and with respect to any Tenant Alterations that cost $1,000,000

or more, Tenant shall pay to Landlord a construction management fee equal to two percent (2%) of the total costs of such Tenant Alterations. Tenant shall reimburse Landlord for all third-party out-of-pocket costs and expenses incurred by Landlord in connection with any Tenant Alterations.

Section 9.04. Work Requirements.

All Tenant Alterations performed by Tenant in the Leased Premises, shall be performed (i) promptly and in a workmanlike manner with first-class materials; (ii) by duly qualified or licensed and bonded or insured persons; (iii) without interference with, or disruption to, the operations of Landlord or other tenants or occupants of the Building or Project; and (iv) in accordance with (a) plans and specifications approved in writing in advance by Landlord (as to both design and materials) which such approval shall not be unreasonably withheld, conditioned or delayed, except in cases where such plans and specifications call for alterations to the structural portions of the Building or which can reasonably be expected to adversely affect the Building Systems, (b) the REA, and (c) all applicable governmental permits, rules and regulations. In the event of any conflict between any Landlord approved Tenant plans and specifications and the Condominium Documents and/or the REA, the Landlord approved plans shall control.

Section 9.05. Ownership of Improvements.

All Tenant Alterations made to the Leased Premises, including, without limitation, the Tenant Work (the "**Leasehold Improvements**"), shall be deemed to be the property of Tenant when made, and ownership of such Leasehold Improvements shall pass to Landlord upon the expiration or earlier termination of the Lease Term and shall remain upon and be surrendered with the Leased Premises in good order, condition and repair, unless Landlord advises Tenant at the time Landlord grants its consent to any such Leasehold Improvements that such removal shall be required. All movable goods, inventory, office furniture, equipment, trade fixtures and other movable personal property belonging to Tenant that are not permanently affixed to the Leased Premises, shall remain Tenant's property ("**Tenant's Property**") and shall be removable by Tenant at any time, provided that Tenant (i) is not in violation of any provision of this Lease, and (ii) repairs any damage to the Leased Premises or the Building caused by the removal of any of Tenant's Property.

Section 9.06. Removal of Tenant's Property.

Tenant shall remove all of Tenant's Property (and any Leasehold Improvements as Landlord may direct) prior to the Termination Date or the termination of Tenant's right to possession. Tenant shall repair any damage to the remaining Leasehold Improvements, the Leased Premises or any other portion of the Building caused by such removal. If Tenant fails to timely remove said items, they shall be considered as abandoned and shall become the property of Landlord, or Landlord may remove and dispose of them at Tenant's cost and expense. In such event, Tenant shall reimburse Landlord its costs to remove and dispose of said items, promptly upon receipt of invoice from Landlord. Tenant's obligations under this Article IX shall survive expiration or earlier termination of this Lease.

Section 9.07. Mechanic's Liens.

No mechanic's or other lien shall be allowed against the Building or any portion of the Project as a result of Tenant's improvements to the Leased Premises. Tenant shall promptly pay all Persons furnishing labor, materials or services with respect to any work performed by or on behalf of Tenant on the Leased Premises. If any mechanic's or other lien shall be filed against the Leased Premises or the Building by reason of work, labor, services or materials performed or furnished, or alleged to have been performed or furnished, to or for the benefit of Tenant, Tenant shall cause the same to be discharged of record or bonded to the satisfaction of Landlord within fifteen (15) business days subsequent to the filing thereof. If Tenant fails to discharge or bond any such lien, Landlord, in addition to all other rights or remedies provided in this Lease, may bond said lien or claim (or pay off said lien or claim if it cannot with reasonable effort be bonded) without inquiring into the validity thereof and all expenses incurred by Landlord in so discharging said lien, including reasonable attorney's fees, shall be paid by Tenant to Landlord as Additional Rent on ten (10) days' demand.

Section 9.08. Cabling; Telecommunications Installations.

All voice, data, video, audio and other low voltage control transport system cabling and/or cable bundles ("**Tenant Lines**") installed in the Building by Tenant or its contractor shall be (A) plenum rated and/or have a composition makeup suited for its environmental use in accordance with NFPA 70/National Electrical Code; (B) labeled every 3 meters with the Tenant's name and origination and destination points; (C) installed in accordance with all EIA/TIA standards and the National Electric Code; (D) installed and routed in accordance with a routing plan showing "as built" or "as installed" configurations of cable pathways, outlet identification numbers, locations of all wall, ceiling and floor penetrations, riser cable routing and conduit routing (if applicable), and such other information as Landlord may request. The routing plan shall be available to Landlord and its agents at the Building upon request. Upon Landlord's written request delivered at the time Landlord approves the Tenant Lines installation, and at Tenant's sole cost and expense, Tenant shall cause all Tenant Lines (or such Tenant Lines as Landlord shall request) to be removed at the expiration or earlier termination of this Lease. Tenant and its telecommunications companies, including local exchange telecommunications companies and alternative access vendor services companies, shall have no right of access to and within the Building, for the installation and operation of telecommunications systems, including voice, video, data, Internet, and any other services provided over wire, fiber optic, microwave, wireless, and any other transmission systems ("**Telecommunications Services**"), for part or all of Tenant's telecommunications within the Building and from the Building to any other location without Landlord's prior written consent, which consent shall not be unreasonably withheld, conditioned or delayed; provided, however, Tenant shall be entitled to use its pro rata share of risers, chases and conduit space within the Building for the installation and operation of Telecommunication Services so long as Landlord reasonably approves the plans and specifications therefor and Tenant otherwise complies with the terms and conditions of this Lease with respect to Tenant Alterations. All providers of Telecommunications Services must be on the then-current pre-approved list for the Building, which Landlord shall provide upon request by Tenant (Landlord hereby approving Comcast and Verizon), or shall be approved by Landlord in advance, which approval shall be in Landlord's sole judgment (and which approval, if granted,

may be based upon conditions determined by Landlord at such time), and shall be required to comply with the rules and regulations of the Building, applicable laws and Landlord's policies and practices for the Building. Tenant acknowledges that Landlord shall not be required to provide or arrange for any Telecommunications Services and that Landlord shall have no liability to Tenant in connection with the installation, operation or maintenance of Telecommunications Services or any equipment or facilities relating thereto. Tenant, at its cost and for its own account, shall be solely responsible for obtaining all Telecommunications Services.

Section 9.09. Security System.

Tenant may elect to install an access controlled security system in the Leased Premises; provided, however, any such system shall be compatible with the existing Building access control system and the plans and specifications for any such system shall be subject to the prior approval of Landlord in all respects (which approval shall not be unreasonably withheld, delayed or conditioned). The work to install any such security system shall be performed in accordance with this Lease, including, without limitation, this Article IX.

Section 9.10. Rooftop Equipment.

A. Tenant shall have the non-exclusive right to use a portion of the roof of the Building, which shall be designated by Landlord, for the installation of a satellite dish or antenna, and other mechanical equipment (collectively, the "**Rooftop Equipment**") for use in connection with Tenant's business in the Leased Premises, provided that (i) the Rooftop Equipment is permitted under the applicable laws, rules and regulations of the Federal Communications Commission, the Federal Aviation Administration, the Commonwealth of Massachusetts and any other governmental and quasi-governmental authorities having jurisdiction over the Building or Landlord, (ii) the Rooftop Equipment conforms to all such applicable laws, rules and regulations, (iii) Tenant has obtained all permits, licenses, variances, authorizations and approvals that may be required in order to install such Rooftop Equipment and any insurance required by Landlord, (iv) each satellite dish or antenna is not more than twenty inches (20") in diameter and mounted so the topmost part is not more than thirty-six inches (36") in height, (v) the Rooftop Equipment is not more than the weight that Landlord shall determine is appropriate for the roof (which Landlord shall specify to Tenant upon Tenant's written request), (vi) Tenant installs any screen or other covering for the Rooftop Equipment that Landlord may require (the size, type and style of which shall be subject to Landlord's prior written approval) in order to camouflage or conceal the Rooftop Equipment, (vii) Tenant shall pay Landlord (within thirty (30) days after receipt of an invoice therefor) an amount equal to all costs incurred by Landlord to have an engineer review the plans and specifications for the Rooftop Equipment, the location specifications for the Rooftop Equipment and the plans, specifications and method for attaching the Rooftop Equipment to the Building, and (viii) the Rooftop Equipment do not adversely affect any antenna or other equipment that is on the roof of the Building. In addition, the style, color, materials, exact location and method of installation of the Rooftop Equipment must be approved by Landlord (in its sole discretion). Tenant shall maintain the Rooftop Equipment in good condition and repair and in compliance with all applicable laws, rules, regulations and requirements.

B. Prior to or contemporaneously with requesting Landlord's approval of the installation of the Rooftop Equipment, Tenant shall provide to Landlord plans and specifications

for the Rooftop Equipment (including size, location, height, weight and color) and plans and specifications for the installation thereof (the "**Rooftop Equipment Plans**"). Prior to installation of the Rooftop Equipment, Tenant shall provide to Landlord: (i) copies of all required governmental and quasi-governmental permits, licenses, special zoning variances, and authorizations, all of which Tenant shall obtain at its own cost and expense; and (ii) a policy or certificate of insurance evidencing such insurance coverage as may be required by Landlord for the installation, operation and maintenance of the Rooftop Equipment and sufficient to cover, among other things, the indemnities from Tenant to Landlord provided in the Lease. Landlord may withhold its approval of the installation of the Rooftop Equipment if the installation, operation or removal of the Rooftop Equipment may (1) damage the structural integrity of the Building or void any warranty or guaranty applicable to the roof or any portion of the Building, (2) materially interfere with any service provided by Landlord to the Building or any tenant or occupant thereof, (3) materially interfere with the use of any part of the Building by any tenant or occupant in the Building, or (4) cause the violation of any zoning ordinance or other governmental or quasi-governmental law, rule or regulation applicable to the Building. Tenant shall not be entitled to rely on any such approval as being a representation by Landlord that such installation and operation is permitted by or in accordance with any zoning ordinance or other governmental or quasi-governmental law, rule or regulation applicable to the Building. Landlord, at its sole option and discretion, may require Tenant, at any time prior to the expiration of this Lease, to terminate the operation of the Rooftop Equipment if it is causing physical damage to the structural integrity of the Building or voids any warranty or guaranty applicable to the roof or the Building, materially interferes with any other service provided by the Building, materially interferes with any other tenant's business, or causes the violation of any condition or provision of this Lease or any governmental or quasi-governmental law, rule or regulation applicable to the Building (now or hereafter in effect). If, however, Tenant can correct the damage or prevent said interference caused by the Rooftop Equipment to Landlord's satisfaction within thirty (30) days, Tenant may restore its operation so long as Tenant promptly commences to cure such damage and diligently pursues such cure to completion. If the Rooftop Equipment is not completely corrected and restored to operation within thirty (30) days, Landlord, at its sole option, may require that the Rooftop Equipment be removed at Tenant's expense. If Landlord or any other tenant in the Building shall require that the Rooftop Equipment be moved to another location on the roof, either to accommodate Landlord or to provide other tenants or occupants in the Building with access to the roof for placement of other antennas, other electrical equipment or other reasonably Landlord-approved uses or installations or to avoid interference with future business or uses of any space in the Building, Landlord shall have the right, at its sole expense, to relocate the Rooftop Equipment to another place on the roof, provided that such new location does not materially adversely affect the operation of such Rooftop Equipment. Landlord shall use reasonable efforts to minimize any interference with Tenant's conduct of its business in connection with any such relocation. If other Landlord-approved rooftop equipment is materially interfering with the use of Tenant's Rooftop Equipment, Landlord shall use reasonable efforts to relocate Tenant's Rooftop Equipment or the rooftop equipment of another tenant to another location on the roof. At the expiration or earlier termination of the Term or upon termination of the operation of the Rooftop Equipment, at Tenant's sole cost, the Rooftop Equipment and all cabling and other equipment relating thereto shall be removed from the Building and the area where the Rooftop Equipment was located shall be restored to its condition existing prior to such

installation, in a manner and with materials reasonably determined by Landlord. Tenant hereby authorizes Landlord to remove and dispose of the Rooftop Equipment and charge Tenant for all costs and expenses incurred by Landlord in connection therewith if Tenant has not done so on or before the expiration or earlier termination of the Term of this Lease. Tenant agrees that Landlord shall not be liable for any property disposed of or removed by Landlord. Tenant's obligation to perform and observe this covenant shall survive the expiration or earlier termination of the term of this Lease.

C. Tenant covenants and agrees that the installation, operation and removal of the Rooftop Equipment will be at its sole risk. Tenant covenants and agrees absolutely and unconditionally to indemnify, defend and hold Landlord harmless from and against all claims, actions, damages, liability, judgments, settlements, costs and expenses (including reasonable attorney's fees and expenses) in connection with the loss of life, personal or bodily injury, damage to property or business or any other loss or injury to the extent arising out of the installation, operation, maintenance or removal of the Rooftop Equipment, including without limitation, any loss or injury resulting from transmissions from the Rooftop Equipment.

ARTICLE X

REPAIRS, MAINTENANCE, AND LANDLORD'S ACCESS

Section 10.01. Repairs by Landlord.

Landlord shall, throughout the Lease Term, keep and maintain, or cause to be kept and maintained, in good order, condition and repair the Building and Common Areas, including, without limitation the roof, the exterior and structural portions of the Building, and the central or base Building mechanical (including elevators), electrical, fire/life safety and sprinkler, and plumbing systems (specifically excluding any supplemental HVAC system or any other system exclusively servicing the Leased Premises) (collectively, the "**Building Systems**"). If any such repairs are necessitated by Tenant's breach of this Lease, or by any act or negligence of Tenant, its agents, employees, assigns, concessionaires, contractors or invitees, Tenant shall reimburse to Landlord the reasonable cost incurred in completing such repairs within thirty (30) days of demand therefor.

Section 10.02. Repairs and Maintenance by Tenant.

Throughout the Term Tenant shall maintain the Leased Premises, including any Leasehold Improvements or equipment therein and any improvements or equipment exclusively servicing the Leased Premises (and any supplemental HVAC systems servicing the Leased Premises) or designated for the exclusive use of Tenant in good order, condition and repair. Tenant shall not cause or permit any waste, damage or injury to the Leased Premises, Building or Project. Tenant's obligations shall include, without limitation, the repair and replacement of appliances and equipment installed specifically for Tenant such as refrigerators, disposals, computer room, air conditioning, sinks and special plumbing fixtures, special fixtures and bulbs for those fixtures, and any non-standard outlets.

Section 10.03. Intentionally Omitted.

ARTICLE XI

CASUALTY

Section 11.01. Fire or Other Casualty.

Tenant shall give prompt notice to Landlord in case of fire or other casualty ("**Casualty**") to the Leased Premises or the Building. If the Building is damaged by Casualty, Landlord shall within sixty (60) days after the occurrence thereof, notify Tenant in writing of Landlord's reasonable estimate of the length of time necessary to repair or restore such Casualty damage from the time that repair work would commence ("**Landlord's Restoration Estimate**") obtained from a reputable general contractor with at least ten (10) years' experience performing restorations similar to those required in this Building.

Section 11.02. Right to Terminate.

A. If (i) more than 50% of the Floor Area of the Building is damaged and rendered untenantable (which shall be deemed to include becoming inaccessible) and Landlord's Restoration Estimate determinates that the estimated time to complete restoration exceeds one (1) year from the date of the Casualty; (ii) during the last twenty-four (24) months of the Term, more than 50% of the Floor Area of the Leased Premises are damaged and rendered untenantable; or (iii) more than 50% of the Floor Area of the Leased Premises are damaged and rendered untenantable and Landlord's Restoration Estimate determines that such damage cannot be repaired within one (1) year from the date of the Casualty, then Landlord may terminate this Lease by notice to Tenant within sixty (60) days after the date of Landlord's Restoration Estimate. Without limitation, Landlord agrees not to exercise its right to terminate this Lease pursuant to this Section 11.02.A (x) in a manner that will unreasonably discriminate against Tenant vis a vis other tenants in the Building of similar size, and (y) unless Landlord simultaneously terminates the leases of at least fifty percent (50%) of the tenants of the Building that Landlord has the right to terminate. If Landlord so terminates this Lease then the Termination Date shall be the date set forth in the notice to Tenant, which date shall not be less than thirty (30) days nor more than ninety (90) days after the giving of said notice.

B. If, as a result of a Casualty, more than fifty percent (50%) of the Floor Area of the Leased Premises immediately before such Casualty is rendered untenantable, and Landlord's Restoration Estimate determines that that the estimated time to complete restoration exceeds one (1) year from the date of the Casualty, then Tenant may, at its election, terminate this Lease by notice given to Landlord within sixty (60) days after Landlord's delivery of Landlord's Restoration Estimate to Tenant, which termination shall be effective as of the date which is sixty (60) days following the date of such notice by Tenant. In addition, if neither Landlord nor Tenant have terminated this Lease and Landlord's restoration obligations have not been substantially completed by the date which is one (1) year after the date of such Casualty (or, if Landlord's Restoration Estimate indicated that restoration would take longer than one (1) year, by the date set forth in Landlord's Restoration Estimate), then Tenant shall have the right to terminate this Lease within thirty (30) days after the end of such period by delivering written Notice to Landlord. Unless within thirty (30) days after receipt of Tenant's Notice Landlord's restoration obligations are substantially completed (in which event the termination shall be null

and void and this Lease shall remain in full force and effect), then this Lease shall be deemed to have terminated as of the date of the giving of Tenant's Notice.

C. If the Casualty shall render the Leased Premises untenantable, in whole or in part, and Tenant does not operate in such untenantable portion of the Leased Premises, all Rent shall abate proportionately during the period of such untenantability, computed on the basis of the ratio which the amount of Floor Area of the Leased Premises rendered untenantable bears to the total Floor Area of the Leased Premises. Such abatement shall terminate on the earlier of (i) sixty (60) days after the date any such repair and restoration work is substantially completed by Landlord, or (ii) the date Tenant reopens for business in the portion of the Leased Premises previously rendered untenantable. Except to the extent specifically set forth in this Section 11.03, neither the Rent nor any other obligations of Tenant under this Lease shall be affected by any Casualty, and Tenant hereby specifically waives all other rights it might otherwise have under law or by statute.

Section 11.03. Landlord's Duty to Reconstruct.

Subject to (i) Landlord's ability to obtain the necessary permits and the availability of insurance proceeds (so long as Landlord has carried the property insurance required to be carried by Landlord pursuant to Section 8.08 above) and (ii) either party's right to terminate this Lease pursuant to the provisions of this Article XI, Landlord shall repair (or cause to be repaired pursuant to the Condominium Documents) the Leased Premises (excluding any Tenant's Property, Tenant Work and other Leasehold Improvements in the Leased Premises, which Tenant hereby agrees to promptly repair, restore or replace), to a substantially similar condition as existed prior to the Casualty; provided, however, so long as Landlord maintained the insurance coverage required of Landlord under Section 8.08 above, Landlord (or the party so repairing the Leased Premises pursuant to the Condominium Documents) shall not be required to expend an amount in excess of the insurance proceeds received by Landlord (or the party entitled to such proceeds pursuant to the Condominium Documents) in performing such repairs or reconstruction. Notwithstanding anything to the contrary contained herein if Tenant has no reasonable means of accessing any portion of the Leased Premises, and actually does not access any portion of the Leased Premises, as a result of such Casualty, then all Rent shall abate in accordance with the terms of this Section 11.03, plus the deductible maintained under such insurance coverage.

11.04. Tenant's Duty to Reconstruct.

Provided this Lease is not terminated pursuant to the provisions of this Article XI, after Landlord has fully performed its repair obligations as set forth in Section 11.03, Tenant shall promptly commence and diligently pursue to completion the redecorating and refixturing of the Leased Premises, including repairing, restoring or replacing Tenant's Property and Leasehold Improvements, to a substantially similar condition as existed prior to the Casualty. Tenant's reconstruction work shall be performed in accordance with Article IX of this Lease.

ARTICLE XII

CONDEMNATION

Section 12.01. Taking of Leased Premises.

A. If more than twenty-five percent (25%) of the Floor Area of the Leased Premises shall be appropriated or taken under the power of eminent domain, or conveyance shall be made in anticipation or in lieu thereof ("**Taking**"), either party may terminate this Lease as of the effective date of the Taking by giving notice to the other party of such election within thirty (30) days prior to the date of such Taking.

B. If there is a Taking of a portion of the Leased Premises and this Lease is not terminated pursuant to Section 12.01.A, above, then (i) as of the effective date of the Taking, this Lease shall terminate only with respect to the portion of the Leased Premises taken; (ii) after the effective date of the Taking, the Rent shall be reduced by multiplying the same by a fraction, the numerator of which shall be the Floor Area taken and the denominator of which shall be the Floor Area of the Leased Premises immediately prior to the Taking; and (iii) as soon as reasonably possible after the effective date of the Taking, Landlord shall, to the extent feasible, restore the remaining portion of the Leased Premises to a complete unit of a similar condition as existed prior to any work performed by Tenant (excluding Tenant's Property and Leasehold Improvements in the Leased Premises and any other items included as part of Tenant Work pursuant to Exhibit B, which shall be Tenant's obligation to repair, restore or replace), provided, however, Landlord shall not be required to expend more on such alteration or restoration work than the condemnation award received and retained by Landlord for the Leased Premises.

Section 12.02. Taking of Building.

If there is a Taking of any portion of the Building so as to render, in Landlord's judgment, the remainder unsuitable for use as an office building, Landlord shall have the right to terminate this Lease upon thirty (30) days' notice to Tenant. Provided Tenant is not then in violation of any provision of this Lease, Tenant shall receive a proportionate refund from Landlord of any Rent Tenant paid in advance.

Section 12.03. Condemnation Award.

All compensation awarded for a Taking of any part of the Leased Premises (including the Leasehold Improvements) or a Taking of any other part of the Building shall belong to Landlord. Tenant hereby assigns to Landlord all of its right, title and interest in any such award. Tenant shall have the right to collect and pursue any separate award as may be available under local procedure for moving expenses or Tenant's Property, relocation expenses and the unamortized cost of Leasehold Improvements paid for by Tenant, so long as such award does not reduce the award otherwise belonging to Landlord as aforesaid.

ARTICLE XIII

PARKING

Section 13.01. Parking Rights.

Provided that Tenant is occupying the Leased Premises, Tenant shall have the right to purchase the number of monthly Parking Contracts set forth in Section 1.01.N, above, from the operator of the Garage on an unreserved basis and at the prevailing rates, terms and conditions as established by the Garage operator from time to time. Tenant shall notify the Garage operator of the desired number of monthly Parking Contracts (up to the allotment set forth in Section 1.01.N) within thirty (30) days of the Term Commencement Date. Tenant acknowledges and agrees that Tenant's use of the Garage shall be non-exclusive and shared with employees and visitors of space in the Project and the general public on a first come first served basis; provided, however, Landlord shall ensure that Tenant is able to use the full number of Tenant's Parking Contracts at all times during Building Hours. Without limiting the foregoing, in the event that Tenant is regularly unable to find available parking in the Garage outside of Business Hours, Landlord and Tenant shall reasonably coordinate to ensure that Tenant has access to the number of parking spaces Tenant reasonably anticipates using outside of Business Hours upon advance notice to Landlord of the need for such use outside of Business Hours.

Section 13.02. Parking Rules and Conditions.

Use of the Garage by Tenant, its employees, agents and business invitees is subject to the rules and regulations of Landlord and/or the Garage operator as may be promulgated or amended by Landlord and/or the Garage operator from time to time, as well as any parking easement that may encumber the Garage from time to time. All monthly Parking Contracts obtained by Tenant are non-transferable other than to permitted sublessees and assignees hereunder. If after thirty (30) days following the Term Commencement Date Tenant fails to maintain, or elects to purchase fewer than, the full number of monthly Parking Contracts to which it is entitled under Section 13.01, above, Tenant's right to purchase the unused Parking Contracts shall expire and be of no further force or effect; provided that Tenant shall have the right to request additional Parking Contracts (not to exceed the maximum number of Parking Contracts Tenant is entitled to receive under this Lease). Tenant's request for such additional Parking Contracts shall be subject to availability, and if Landlord determines that such additional Parking Contracts are not available, Landlord shall have no obligation to provide said additional Parking Contracts to Tenant.

Section 13.03. Access Cards.

Landlord and/or the Garage operator may elect to provide parking cards or keys to control access to the Garage or operate the Garage on a valet or managed parking basis. In such event, Landlord or the Garage operator shall provide Tenant with one card or key for each Parking Contract that Tenant is entitled to hereunder, provided that Landlord or the Garage operator shall have the right to require Tenant or its employees to place a deposit on such access cards or keys and to pay a fee for any lost or damaged cards or keys. Landlord and/or the Garage operator may elect to designate certain portions of the Garage as exclusive parking for non-office uses and/or to designate certain portions of the Garage as exclusive parking for office uses only.

Section 13.04. Additional Parking Contracts.

In addition, provided (i) Tenant has delivered written notice of such election to Landlord by not later than the first (1st) anniversary of the Term Commencement Date (the "**Additional Parking Contract Notice**"), which Additional Parking Contract Notice shall specify the exact number of Additional Parking Contracts Tenant is electing to purchase, and (ii) Tenant, itself, or a Permitted Transferee is occupying seventy-five percent (75%) or more of the Leased Premises, Tenant shall have the one-time right to elect to purchase up to an additional sixty-four (64) Parking Contracts ("**Additional Parking Contracts**") to be located at the so-called "Block 3 Garage" located on Canal Street directly across from the Building. Tenant shall purchase the Additional Parking Contracts upon all of the same terms and conditions as Tenant's Parking Contracts. If Tenant does not deliver the Additional Parking Contract Notice to Landlord by the first (1st) anniversary of the Term Commencement Date, Tenant shall have no further right to purchase the Additional Parking Contracts. Time is of the essence with respect to the giving of the Additional Parking Contract Notice.

ARTICLE XIV

SUBORDINATION AND ATTORNMENT

Section 14.01. Subordination.

Subject to and conditioned upon the requirements of Section 14.04 below, Tenant's rights under this Lease are subordinate to (i) all present and future ground or underlying leases affecting all or any part of the Building, including without limitation, the Land, and (ii) any easement, license, mortgage, deed of trust or other security instrument now or hereafter affecting the Building (those documents referred to in (i) and (ii) above being collectively referred to as a "**Mortgage**" and the Person or Persons having the benefit of same being collectively referred to as a "**Mortgagee**") and to all and any renewals, extensions, modifications, recastings or refinancings thereof. In confirmation of such subordination, Tenant shall, within thirty (30) days after Landlord's request, execute any requisite or appropriate subordination or other document, but no further act by Tenant is required to effectuate the foregoing subordination or the attornment specified below. Tenant hereby waives the provision of any statute or rule of law, now or hereafter in effect, which may give or purport to give Tenant any right to terminate or otherwise adversely affect this Lease and the obligations of Tenant hereunder in the event that any foreclosure, deed in lieu of foreclosure, power of sale or similar proceeding is prosecuted or completed or in the event any ground lease is terminated. Notwithstanding the foregoing, Tenant agrees that the Mortgagee or ground lessor shall have the right to make this Lease superior to the lien of the Mortgage or ground lease, by the filing of subordination statements or otherwise, and Tenant hereby consents to any such filing. Landlord represents that as of the date of this Lease, there are no Mortgages affecting the Building.

Section 14.02. Attornment.

If any Mortgagee succeeds to all or part of Landlord's interest in the Leased Premises, whether by purchase, foreclosure, deed in lieu of foreclosure, power of sale, termination of lease or otherwise, Tenant shall, upon request from Landlord or Landlord's successor-in-interest, without charge, attorn to such successor-in-interest and recognize such successor-in-interest as

the landlord under this Lease; provided and on condition that such successor-in-interest shall assume the obligations of Landlord, subject to the provisions of the subordination, nondisturbance and attornment agreement provided in Section 14.04 below.

Section 14.03. Estoppel Certificate.

Within ten (10) business days after receiving notice from Landlord, and without charge or cost to Landlord, Tenant shall certify by written instrument to Landlord or any other Person designated by Landlord: (i) that this Lease is in full force and effect and unmodified (or if modified, stating the modification); (ii) the dates, if any, to which each component of the Rent due under this Lease has been paid; (iii) whether Landlord or Tenant has failed to perform any covenant, term or condition under this Lease, and the nature of Landlord's or Tenant's failure, if any; and (iv) such other relevant factual information as Landlord may reasonably request.

Section 14.04. Subordination, Non-Disturbance and Attornment.

Notwithstanding anything to the contrary contained herein, Tenant's obligation to subordinate to any future Mortgage as set forth in Section 14.01 and to attorn to any Mortgagee succeeding to all or part of Landlord's interest in the Leased Premises as set forth in Section 14.02 is conditioned on the Mortgagee or ground lessor agreeing not to disturb Tenant's possession of the Leased Premises hereunder in the form of a commercially reasonable subordination, nondisturbance and attornment agreement reasonably acceptable to Tenant, Landlord and such mortgagee.

Section 14.05. Quiet Enjoyment.

Landlord covenants that it has full right, power and authority to enter into this Lease and that Tenant, for so long as no Default by Tenant then exists under this Lease, shall peaceably and quietly have, hold and enjoy the Leased Premises during the Term without hindrance, ejection or molestation by any Person lawfully claiming by, through or under Landlord, subject, however, to the provisions of this Lease, the REA, and all Mortgages, encumbrances, easements, and matters of record to which the Lease is or may become subject.

ARTICLE XV

ASSIGNMENT AND SUBLETTING

Section 15.01. Landlord's Consent Required.

A. Except as expressly set forth in this Article XV (including, without limitation, Section 15.02), Tenant and any permitted Transferee, as hereinafter defined, shall not voluntarily or involuntarily, by operation of law or otherwise: (i) transfer, assign, mortgage, encumber, pledge, hypothecate, or assign all or any of its interest in this Lease; (ii) sublet or permit the Leased Premises, or any part thereof, to be used by others, including, but not limited to, concessionaires or licensees; (iii) issue new stock (or partnership shares or membership interests), create additional classes of stock (or partnership shares or membership interests), or sell, assign, pledge, hypothecate or otherwise transfer the outstanding voting stock (or partnership shares or membership interests) so as to result in a change in control of Tenant or any permitted Transferee, provided, however, that this subsection (iii) shall not be applicable to Tenant or the applicable permitted Transferee so long as it is a publicly owned corporation

whose outstanding voting stock is listed on a national securities exchange (as defined in the Securities Exchange Act of 1934, as amended) or is traded actively in the over-the-counter market; or (iv) sell, assign or otherwise transfer all or substantially all of Tenant's or any permitted Transferee's assets; without the prior consent of Landlord, in each instance, which consent Landlord shall not unreasonably withhold, condition or delay. All of the foregoing transactions shall be referred to collectively or singularly as a "**Transfer**", and the Person to whom Tenant's interest is transferred shall be referred to as a "**Transferee**".

Notwithstanding the foregoing, it shall not be unreasonable for Landlord to withhold, condition or delay its consent to any proposed Transfer if Landlord reasonably determines that the proposed Transferee (a) is not of a type and quality consistent with the first-class nature of the Building; (b) does not have the financial capacity and creditworthiness to undertake and perform the obligations under this Lease or the sublease, as applicable; (c) proposes to use the Leased Premises for other than the Permitted Use or for any purposes prohibited hereunder; (d) is either (x) a tenant of the Building or (y) a party with whom Landlord is currently negotiating with for space in the Building, unless in the case of subclauses (x) or (y) Landlord does not then have comparable space to the Leased Premises or the portion of the Leased Premises proposed to be sublet, as applicable, available within the Building; and (e) is a party by whom any suit or action could be defended on the grounds of sovereign immunity.

B. Any Transfer without Landlord's consent shall not be binding upon Landlord, shall confer no rights upon any third Person, and shall, without notice or grace period of any kind, constitute a Default by Tenant under this Lease. Acceptance by Landlord of Rent following any Transfer shall not be deemed to be a consent by Landlord to any such Transfer, acceptance of the Transferee as a tenant, release of Tenant from the performance of any covenants herein, or waiver by Landlord of any remedy of Landlord under this Lease, although amounts received shall be credited by Landlord against Tenant's Rent obligations. Consent by Landlord to any one Transfer shall not be a waiver of the requirement for consent to any other Transfer. No reference in this Lease to assignees, concessionaires, subtenants or licensees shall be deemed to be a consent by Landlord to occupancy of the Leased Premises by any such assignee, concessionaire, subtenant or licensee.

C. Tenant shall remain fully and primarily liable and obligated under this Lease for the entire Term in the event of any Transfer, and in the event of a Default by the Transferee, Landlord shall be free to pursue Tenant, the Transferee, or both, without prior notice or demand to either. Without limiting the foregoing, in the event that a Transferee is a subtenant pursuant to sublease permitted or approved pursuant to the terms hereof, for so long as Tenant remains primarily liable and obligated to Landlord under the terms of this Lease Tenant shall not be deemed to be in Default of this Lease if such subtenant consummates a Transfer in violation of the terms of this Article XV. Landlord may require as a condition to its consent to any assignment of this Lease that the assignee execute an instrument in which such assignee assumes the obligations of Tenant hereunder and that the Tenant execute a commercially reasonable instrument in which such Tenant confirms its continued liability hereunder.

D. If Tenant desires the consent of Landlord to a Transfer, Tenant shall submit to Landlord, at least thirty (30) days prior to the proposed effective date of the Transfer, a written notice (the "**Transfer Notice**") which includes the business terms of the assignment or

subletting, financial information and statements concerning the proposed transferee, including, to the extent available, financial statements of the proposed transferee for its two (2) most recent fiscal years, all of which statements have been certified as correct and complete in all material respects by an authorized officer of the proposed transferee, and such other information as Landlord may reasonably require about the proposed Transfer and the transferee which Landlord requests within five (5) business days after receipt of the Transfer Notice.

E. In the event Tenant requests to assign the Lease or sublease fifty percent (50%) or more of the Leased Premises for a term that expires within the last six (6) months of the Term, Landlord shall have the right to terminate this Lease as to that portion of the Leased Premises proposed to be covered by a Transfer, and if Landlord so elects to do so, then as of the effective date of termination, Tenant shall be released from its obligations with respect to such recaptured space, except for those obligations that survive the expiration or earlier termination of the Lease. Landlord may exercise such right to terminate by giving notice to Tenant at any time within thirty (30) days after the date on which Landlord received the Transfer Notice from Tenant requesting consent to the Transfer. If Landlord exercises such right to terminate, Landlord shall be entitled to recover possession of, and Tenant shall surrender such portion of, the Leased Premises (with appropriate demising partitions erected at the expense of Tenant) on the effective date of the proposed Transfer. In the event Landlord exercises such right to terminate, Landlord shall have the right to enter into a lease with the proposed transferee without incurring any liability to Tenant on account thereof. If Landlord does not exercise its right to terminate this Lease after receiving a Transfer Notice, and Tenant fails to effectuate the proposed Transfer within one hundred eighty (180) days after Landlord consents to the proposed Transfer set forth in the Transfer Notice, then, before Tenant may Transfer Tenant's interest in the Lease or rights to the Leased Premises, Tenant shall submit an updated Transfer Notice to Landlord and Landlord shall again have the right to terminate this Lease or approve or disapprove of the proposed Transferee as set forth herein. This Section 15.01 E shall not apply to any assignments or subleases to a Permitted Transferee under Section 15.02 below.

F. If Landlord consents to any Transfer, excepting only any assignments or subleases to a Permitted Transferee (for which Landlord's consent is not required) Tenant shall pay to Landlord fifty percent (50%) of all rental and other consideration received by Tenant (less all reasonable out-of-pocket costs and expenses paid by Tenant in connection with consummating such Transfer, including, without limitation, third-party brokerage fees, legal fees and expenses, architectural fees, alteration costs and the fair market value of any personal property included in such Transfer) in excess of the Rent paid by Tenant hereunder for the portion of the Leased Premises so transferred. Such rent shall be paid within thirty (30) days such rent or consideration is received by Tenant. In addition, Tenant shall pay to Landlord a reasonable fee to cover accounting costs, and all legal fees, incurred by Landlord in connection with a proposed Transfer, regardless of Landlord's consent to or rejection of such requested Transfer.

Section 15.02. Permitted Transfers.

Notwithstanding anything contained herein to the contrary, Tenant may upon at least ten (10) days' prior written Notice to Landlord (an "**Affiliate Notice**") (provided that if such Affiliate Notice is prohibited by applicable confidentiality requirements, Tenant may give such

Affiliate Notice within ten (10) days after the Transfer), but without Landlord's prior written consent as required in Section 15.01.A above, without having to deliver a Transfer Notice as required in Section 15.01.D above, and without any obligation to share any excess consideration or pay a review fee to Landlord as required in Section 15.01.F above, (x) have a change in control or other corporate transfer in which Tenant remains the surviving entity, so long as following such change in control Tenant has a net worth immediately after such change in control at least equal to the net worth of Tenant immediately prior to such change in control, and/or (y) assign this Lease, or sublet all or a portion of the Leased Premises to a Permitted Transferee, provided in either case that no Default exists at the time of the delivery of the Affiliate Notice and the business operations of Tenant following the change in control or the proposed Permitted Transferee (which shall be disclosed in the Affiliate Notice) shall comply with the Permitted Use. A "**Permitted Transferee**" shall mean a corporation or other entity which (i) shall directly or indirectly control, be controlled by or be under common control with Tenant (but only for so long as such control so remains) or which results from a merger or consolidation with Tenant or succeeds to all or substantially all of the business and assets of Tenant, (ii) is not a party by whom any suit or action could be defended on the grounds of sovereign immunity, and (iii) in the case of a merger or consolidation or succession to all or substantially all of the business and assets of Tenant, has a net worth immediately after such merger, consolidation or succession at least equal to the net worth of Tenant immediately prior to such merger or consolidation. For purposes of the immediately preceding sentence, "control" shall be deemed to be ownership of more than fifty percent (50%) of the legal and equitable interest of the controlled corporation or other business entity or the power of the controlling entity to direct management and policies of the controlled entity. In the event of any assignment to a Permitted Transferee, Tenant shall remain fully liable to perform the obligations of the Tenant under this Lease, such obligations in the case of an assignment (but not with respect to a sublease) to be joint and several with the obligations of the Permitted Transferee as tenant under this Lease, and Tenant and such Permitted Transferee shall execute such agreement as Landlord shall reasonably request to confirm such liability. Notwithstanding anything to the contrary, Tenant shall not assign this Lease or sublet the Leased Premises as part of a series of transactions designed to circumvent the provisions of this Article XV; and if Tenant attempts to do so, then such assignment or sublease shall be deemed an assignment or sublease of this Lease subject to the consent of Landlord in accordance with the provisions of Section 15.01(A).

ARTICLE XVI

DEFAULT AND REMEDIES

Section 16.01. Default.

Each of the following events shall constitute a default ("**Default**") by Tenant under this Lease: (i) if Tenant fails to pay any Rent (or any installment thereof) on or before the due date thereof, and such failure continues for five (5) business days after written notice ("**Monetary Default Notice**") from Landlord thereof, except that (a) if Landlord shall rightfully have given such Monetary Default Notices to Tenant twice in the preceding twelve (12) month period, and (b) thereafter Tenant shall again fail within the same twelve (12) month period to pay any Rent on or before the due date thereof, then such failure by Tenant shall be an immediate Default by Tenant without the requirement of any further Monetary Default Notices by Landlord or any

grace period granted to Tenant; (ii) if Tenant breaches or fails to observe or perform of any term, condition or covenant of this Lease, other than those involving the payment of Rent, and such breach or failure is not cured within thirty (30) days after Tenant's receipt of notice thereof, unless such condition cannot reasonably be cured within such thirty (30) days, in which case Tenant must commence such cure within said thirty (30) days and diligently pursue said cure to its completion (provided, however, if such breach or failure creates a hazard, public nuisance or dangerous situation, said thirty (30) day grace period shall be reduced to forty-eight (48) hours after Tenant's receipt of notice); (iii) if Tenant fails to carry and maintain the insurance required by this Lease and such failure is not cured within three (3) business days after written notice from Landlord, or (iv) if Tenant fails to timely provide the Security Deposit in the then-applicable amount, in accordance with the provisions of Section 17.07.

Section 16.02. Remedies and Damages.

A. If a Default described in Section 16.01, above, occurs, Tenant shall be liable for all damages or losses resulting therefrom or incurred in connection therewith, and Landlord shall have all the rights and remedies provided in this Section 16.02, in addition to all other rights and remedies available under this Lease or provided at law or in equity which rights and remedies may be exercised cumulatively.

B. Landlord may, upon notice to Tenant, terminate this Lease, or terminate Tenant's right to possession without terminating this Lease (as Landlord may elect). If this Lease or Tenant's right to possession under this Lease are at any time terminated under this Section 16.02 or otherwise, Tenant shall immediately surrender and deliver the Leased Premises peaceably to Landlord. If Tenant fails to do so, Landlord shall be entitled to the benefit of all provisions of law respecting the speedy recovery of possession of the Leased Premises (whether by summary proceedings or otherwise).

C. Landlord may also perform, on behalf and at the expense of Tenant, any obligation of Tenant under this Lease which Tenant fails to perform, the cost of which (together with an administrative fee equal to ten percent (10%) of such cost to cover Landlord's overhead in connection therewith) shall be paid by Tenant to Landlord within five (5) days of demand therefor. In performing any obligations of Tenant, Landlord shall incur no liability for any loss or damage that may accrue to Tenant, the Leased Premises or Tenant's Property by reason thereof, except if caused by Landlord's willful and malicious act. The performance by Landlord of any such obligation shall not constitute a release or waiver of any of Tenant's obligations under this Lease.

D. Upon termination of this Lease or of Tenant's right to possession under this Lease, Landlord may at any time and from time to time relet all or any part of the Leased Premises for the account of Tenant or otherwise, at such rentals and upon such terms and conditions as Landlord shall deem appropriate. Landlord shall receive and collect the rents therefor, applying the same first to the payment of such expenses as Landlord may incur in recovering possession of the Leased Premises, including legal expenses and attorneys' fees, in placing the Leased Premises in good order and condition and in preparing or altering the same for re-rental; second, to the payment of such expenses, commissions and charges as may be incurred by or on behalf of Landlord in connection with the reletting of the Leased Premises; and third, to the fulfillment of the covenants of Tenant under this Lease, including the various

covenants to pay Rent. Any such reletting may be for such term(s) as Landlord elects. Any reletting by Landlord shall not be construed as an election by Landlord to terminate this Lease unless Notice of such intention is given by Landlord to Tenant. Notwithstanding any reletting without termination of this Lease, Landlord may at any time thereafter elect to terminate this Lease. In any event, Landlord shall not be liable for, nor shall Tenant's obligations hereunder be diminished by reason of, any failure by Landlord to relet the Leased Premises or any failure by Landlord to collect any sums due upon such reletting. Tenant shall be liable for all damages sustained by Landlord, including, without limitation, deficiency in rent, interest, attorneys' fees, other collection costs, all court costs and all other expenses (including, without limitation, leasing fees) of placing the Leased Premises in first-class rentable condition and relating to the unexpired term, it being understood that any such re-letting may be for a period equal to or shorter or longer than the remaining Term of this Lease. Landlord agrees to use reasonable efforts to relet the Leased Premises after Tenant vacates the Leased Premises in the event that the Lease is terminated based upon a Default by Tenant hereunder. Marketing of the Leased Premises in a manner similar to the manner in which Landlord markets other premises within Landlord's control in the Building shall be deemed to have satisfied Landlord's obligation to use "reasonable efforts." In no event shall Landlord be required to (i) solicit or entertain negotiations with any other prospective tenants for the Leased Premises until Landlord obtains full and complete possession of the Leased Premises including, without limitation, the final and unappealable legal right to re-let the Leased Premises free of any claim of Tenant, (ii) relet the Leased Premises before leasing other vacant space in the Building, (iii) lease the Leased Premises for a rental less than the current fair market rental then prevailing for similar office space in the Building, or (iv) enter into a lease with any proposed tenant that does not have, in Landlord's reasonable opinion, sufficient financial resources or operating experience to operate the Leased Premises in a first-class manner.

E. Upon the termination of this Lease under the provisions of this Article XVI, Tenant shall pay to Landlord the Rent payable by Tenant to Landlord up to the time of such termination, shall continue to be liable for any preceding breach of covenant, and in addition, shall pay to Landlord as damages, at the election of Landlord

either:

(x) amounts ("**Monthly Damages**") equal to the Rent which would have been payable by Tenant had this Lease not been so terminated, payable upon the due dates therefor specified herein following such termination and until what would have been the Termination Date absent such termination, provided, however, if Landlord has relet the Leased Premises as aforesaid, Landlord shall credit Tenant with the net rents received by Landlord from such re-letting (after first deducting the expenses incurred or paid by Landlord in terminating this Lease, as well as the expenses of re-letting, including, without limitation, altering and preparing the Leased Premises for new tenants, brokers' commissions, and all other expenses properly chargeable against the Leased Premises and the rental therefrom) and relating to the unexpired term, it being understood that any such re-letting may be for a period equal to or shorter or longer than the remaining Term of this Lease, it being understood that any such re-letting may be for a period equal to or shorter or longer than the remaining Term of this Lease. In no event shall Tenant be entitled to receive any excess of such net rents over the sums payable by Tenant to

Landlord hereunder and in no event shall Tenant be entitled in any suit for the collection of damages pursuant to this subparagraph (x) to a credit in respect of any net rents from a reletting except to the extent that such net rents are actually received by Landlord. If the Leased Premises or any part thereof should be relet in combination with other space, then proper apportionment on a square foot area basis shall be made of the rent received from such reletting and of the expenses of re-letting;

or:

(y) the amount (the "**Excess Amount**") by which, at the time of the termination of this Lease (or at any time thereafter if Landlord shall have initially elected damages under subparagraph (x), above), (i) the aggregate of the Rent projected over the period commencing with such termination and ending on what would have been the Termination Date absent such termination exceeds (ii) the aggregate projected rental value of the Leased Premises for such period, as both such amounts in (i) and (ii) are reduced to present value using a discount rate of the then-applicable federal discount rate.

In calculating the Rent under subparagraph (x), above, there shall be included all considerations agreed to be paid or performed by Tenant, on the assumption that all such amounts and considerations would have remained constant (except as herein otherwise provided) for the balance of the full Term hereby granted.

Suit or suits for the recovery of such damages, or any installments thereof, may be brought by Landlord from time to time at its election, and nothing contained herein shall be deemed to require Landlord to postpone suit until the date when the Term of this Lease would have expired if it had not been terminated hereunder.

Nothing herein contained shall be construed as limiting or precluding the recovery by Landlord against Tenant of any sums or damages to which, in addition to the damages particularly provided above, Landlord may lawfully be entitled by reason of any Default hereunder on the part of Tenant.

Except as provided in Section 3.03 in connection with a holdover by Tenant, in no event shall Tenant ever be liable for consequential or punitive damages or lost profits.

F. If, as the result of Tenant's Default at any time prior to the Term Commencement Date, this Lease shall be terminated, Tenant shall pay to Landlord on account of such Default, as liquidated and agreed damages (and not as a penalty), immediately upon demand by Landlord, a sum equal to such amount as would have constituted six (6) month's Rent had the Term Commencement Date occurred, which shall be in lieu of the Monthly Damages or the Excess Amount as described above.

Section 16.03. Remedies Cumulative; Costs of Enforcement.

No reference to any specific right or remedy in this Lease shall preclude Landlord from exercising any other right, from having any other remedy, or from maintaining any action to which it may otherwise be entitled under this Lease, at law or in equity. In addition to the foregoing, and without regard to whether this Lease has been terminated, Tenant shall pay to Landlord all costs, including without limitation reasonable attorneys' fees, court costs and other disbursements, incurred by Landlord in connection with enforcing any provision of this Lease.

Section 16.04. Waiver.

A. Neither party shall be deemed to have waived any provision of this Lease, or the breach of any such provision, unless specifically waived by the waiving party in a writing executed by an authorized officer of such party. No waiver of a breach shall be deemed to be a waiver of any subsequent breach of the same provision, or of the provision itself, or of any other provision.

B. Tenant hereby expressly waives any and all rights of redemption and any and all rights to relief from forfeiture which would otherwise be granted or available to Tenant under any present or future statutes, rules or case law. Any notice to quit, or of Landlord's intention to re-enter, is hereby expressly waived.

C. IN ANY LITIGATION (WHETHER OR NOT ARISING OUT OF OR RELATING TO THE LEASE) IN WHICH LANDLORD AND TENANT SHALL BE ADVERSE PARTIES, BOTH LANDLORD AND TENANT KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVE THEIR RESPECTIVE RIGHTS TO TRIAL BY JURY.

D. Tenant agrees to waive any and all counterclaims Tenant may have in any suit for possession by Landlord (other than mandatory counterclaims which would be waived if not asserted at that time) it being understood that the subject of any such counterclaim may be asserted by Tenant but only in a separate action brought by Tenant against Landlord.

ARTICLE XVII

MISCELLANEOUS PROVISIONS

Section 17.01. Notices.

A. Whenever any demand, request, approval, consent or notice (singularly and collectively, "**Notice**") shall or may be given by one party to the other, such Notice shall be in writing and addressed to the parties at their respective addresses as set forth in Section 1.01.I, above, and served by (i) a nationally recognized overnight express courier with receipted delivery, or (ii) registered or certified mail return receipt requested, postage prepaid. The date the Notice is effective shall be the date of receipt or first attempted delivery during business hours. Either party may, at any time, change its Notice address by giving the other party Notice, in accordance with the above, stating the change and setting forth the new address.

B. If any Mortgagee shall notify Tenant that it is the holder of a Mortgage affecting the Leased Premises, no Notice of default of Landlord thereafter sent by Tenant to Landlord shall be effective unless and until a copy of the same shall also be sent to such Mortgagee, in the manner prescribed in this Section 17.01, to the address as such Mortgagee shall designate.

Section 17.02. Recording.

Neither this Lease nor a memorandum thereof shall be recorded without the prior written consent of Landlord.

Section 17.03. Administrative Costs.

If Tenant requests that Landlord review and/or execute any documents in connection with this Lease, including Notice of Transfer and other Transfer documents, and Landlord Waivers of Lien, Tenant shall pay to Landlord, upon demand, as an administrative fee for the review and/or execution thereof, all costs and expenses, including reasonable attorneys' fees (which shall include the cost of time expended by in-house counsel) incurred by Landlord and/or Landlord's agent.

Section 17.04. Legal Expenses.

If Landlord or Tenant institutes any suit against the other in connection with the enforcement of their respective rights under this Lease, the violation of any term of this Lease, the declaration of their rights hereunder, or the protection of Landlord's or Tenant's interests under this Lease, the non-prevailing party shall reimburse the prevailing party for its reasonable expenses incurred as a result thereof including court costs and attorneys' fees within five (5) days of demand therefor. Notwithstanding the foregoing, if Landlord files any legal action for collection of Rent or any eviction proceedings, whether summary or otherwise, for the non-payment of Rent, and Tenant pays such Rent prior to the rendering of any judgment, the Landlord shall be entitled to collect, and Tenant shall pay, all court filing fees and the reasonable fees of Landlord's attorneys. Notwithstanding any judgment related to this Lease, this Section 17.04 shall not be merged into any such judgment, but shall survive the entry of such judgment, and shall continue to be binding on the parties. Post-judgment attorneys' fees and costs related to the enforcement of such judgment shall be recoverable in the same or separate actions.

Section 17.05. Successors and Assigns.

This Lease and the covenants and conditions herein contained shall inure to the benefit of and be binding upon Landlord and Tenant, and their respective permitted successors and assigns. Upon any sale or other transfer by Landlord of its interest in the Leased Premises, Landlord shall be relieved of any obligations under this Lease occurring subsequent to such sale or other transfer.

Section 17.06. Limitation on Right of Recovery Against Landlord.

No shareholder, member, trustee, partner, director, officer, employee, representative or agent of Landlord shall be personally liable in respect of any covenant, condition or provision of this Lease. If Landlord breaches or defaults in any of its obligations in this Lease, Tenant shall look solely to the equity of the then-existing Landlord in the Building for satisfaction of Tenant's remedies. No other asset of Landlord, any partner, director, member, officer or trustee of Landlord or any other person or entity shall be available to satisfy or be subject to any judgment against Landlord in connection with this Lease. In no event shall Landlord ever be liable for consequential or punitive damages or lost profits. In no event shall Tenant have the right to terminate or cancel the Lease as a result of any default by Landlord or breach by Landlord of its covenants or any warranties or promises hereunder, except in the case of a wrongful eviction of Tenant from the Leased Premises (constructive or actual) by Landlord.

Section 17.07. Security Deposit.

A. By not later than five (5) Business Days following the Effective Date, Tenant shall deposit with Landlord in advance upon Tenant's execution of this Lease, for Landlord's general account, the Security Deposit set forth in Section 1.01.G hereof as security for the performance of each and every term, covenant, agreement and condition of this Lease to be performed by Tenant. Landlord may use, apply on Tenant's behalf or retain (without liability for interest) during the Term all or any part of the Security Deposit to the extent required for the payment of any Rent which is unpaid after applicable notice and cure periods, or for any sum which Landlord may expend to cure any Default of Tenant. After each application from the Security Deposit, Tenant shall, within fifteen (15) days of Notice from Landlord, restore said deposit to the amount set forth in Section 1.01.G hereof. The use, application or retention of the Security Deposit by Landlord shall not be deemed a limitation on Landlord's recovery in any case, or a waiver by Landlord of any Default, nor shall it prevent Landlord from exercising any other right or remedy for a Default by Tenant. If Tenant has complied with all the terms, covenants, agreements, and conditions of this Lease, the Security Deposit (less any amount applied as herein provided) shall be returned to Tenant without interest within forty-five (45) days after the Termination Date and after surrender of possession of the Leased Premises to Landlord in accordance with the terms of this Lease. In the event of any sale or transfer of Landlord's interest in the Building, Landlord shall have the right to transfer the security deposit to such purchaser or transferee, in which event Tenant shall look solely to the new landlord for the return of the security deposit and Landlord shall thereupon be released from all liability to Tenant for the return of such security deposit.

B. In lieu of a cash Security Deposit, Tenant may deliver to Landlord, on the date that Tenant executes and delivers this Lease to Landlord, an Irrevocable Standby Letter of Credit (the "**Letter of Credit**") which shall (1) name Landlord as beneficiary, (2) be issued by a bank reasonably acceptable to Landlord, upon which presentment may be made in person in Boston Massachusetts, or by overnight delivery within the forty-eight contiguous United States, (3) be in the amount set forth in Section 1.01.G, (4) be for a term of at least one (1) year, subject to extension in accordance with the terms of the Letter of Credit, (5) provide for automatic annual extensions, without amendment (so-called "evergreen" provision) with a final expiry date no sooner than sixty (60) days after the end of the Term, (6) permit multiple and partial drawings, (7) be fully transferable from time to time by Landlord without the payment of any fees or charges by Landlord, (8) provide that is governed by the International Standard Practice 1998 (ISP 98), International Chamber of Commerce Practice, Publication No. 590, (9) contain the following draw language: "Beneficiary is entitled to draw upon this Letter of Credit (in the amount of the draft submitted herewith) pursuant to that certain Lease (the "Lease") dated _____ by and between ASSEMBLY ROW 5B, LLC, as Landlord, and BLUEBIRD BIO, INC., as Tenant, and (10) otherwise be in form and content reasonably satisfactory to Landlord. If the issuer of the Letter of Credit gives notice of its election not to renew such Letter of Credit for any additional period, Tenant shall be required to deliver a substitute Letter of Credit satisfying the conditions hereof (the "**Substitute Letter of Credit**") at least thirty (30) days prior to the expiration of the term of such Letter of Credit. Tenant agrees that it shall from time to time, renew or replace the original and any subsequent Letter of Credit so that a Letter of Credit, in the full amount required hereunder, is in effect until a date which is at least sixty (60)

days after the Termination Date of this Lease. If Tenant fails to furnish such renewal or replacement at least thirty (30) days prior to the stated expiration date of the Letter of Credit then held by Landlord, Landlord may draw upon such Letter of Credit and hold the proceeds thereof (the "**Security Proceeds**") as a cash Security Deposit pursuant to the terms of Section 17.07.A. Landlord hereby approves Silicon Valley Bank as an issuer of the Letter of Credit.

C. If Tenant is in Default under this Lease, then Landlord shall have the right, at any time after such event, without giving any further notice to Tenant, to draw down from the Letter of Credit (or Substitute Letter of Credit or Additional Letter of Credit, as defined below, as the case may be) (i) the amount necessary to cure such Default or (ii) if such Default cannot reasonably be cured by the expenditure of money, the amount which, in Landlord's opinion, is necessary to satisfy Tenant's liability in account thereof. In the event of any such draw by Landlord, Tenant shall, within fifteen (15) days of written demand therefor, deliver to Landlord an additional Letter of Credit satisfying the foregoing conditions (the "**Additional Letter of Credit**"), except that the amount of such Additional Letter of Credit shall be the amount of such draw. In addition, in the event of a termination based upon the Default of Tenant under this Lease, or a rejection of this Lease pursuant to the provisions of the Federal Bankruptcy Code, Landlord shall have the right to draw upon the Letter of Credit (from time to time, if necessary) to cover the full amount of damages and other amounts due from Tenant to Landlord under this Lease. Any amounts so drawn shall, at Landlord's election, be applied first to any unpaid rent and other charges which were due prior to the filing of the petition for protection under the Federal Bankruptcy Code. Tenant hereby covenants and agrees not to oppose, contest or otherwise interfere with any attempt by Landlord to draw down from said Letter of Credit including, without limitation, by commencing an action seeking to enjoin or restrain Landlord from drawing upon said Letter of Credit. Tenant also hereby expressly waives any right or claim it may have to seek such equitable relief.

D. Upon request of Landlord, Tenant shall, at its expense, cooperate with Landlord in obtaining an amendment to or replacement of any Letter of Credit which Landlord is then holding so that the amended or new Letter of Credit reflects the name of any new owner of the Building. To the extent that Landlord has not previously drawn upon any Letter of Credit, Substitute Letter of Credit, Additional Letter of Credit or Security Proceeds (collectively, the "**Collateral**") held by Landlord, Landlord shall return such Collateral to Tenant on the expiration of the Term, less any amounts due from Tenant hereunder. In no event shall the proceeds of any Letter of Credit be deemed to be a prepayment of rent or a measure of liquidated damages.

E. Provided that as of the later of (i) the second (2nd) anniversary of the Term Commencement Date, and (ii) the date Tenant requests a reduction in the Security Deposit (the "**Reduction Date**") (x) no default then exists or has occurred in the immediately preceding twelve (12) month period, and (y) Tenant shall have provided reasonably satisfactory evidence to Landlord that Tenant's equity market capitalization equals or exceeds $1,200,000,000.00 for the four (4) immediately prior, consecutive quarters (the "**Reduction Conditions**"), the amount of the Security Deposit shall be reduced to $1,376,550.00 on the Reduction Date. The reduction in the Security Deposit shall be accomplished as follows: Tenant shall request such reduction in a written notice to Landlord, and if the Reduction Conditions have been met, Landlord shall so notify Tenant, whereupon (i) Tenant shall provide Landlord with a substitute Letter of Credit in

the reduced Security Deposit amount, or an amendment to the Letter of Credit reducing it to the reduced Security Deposit amount, or (ii) Landlord shall return the positive excess of the cash then being held by Landlord as the Security Deposit, over the then-applicable Security Deposit amount within ten (10) Business Days. If the Reduction Conditions are not satisfied on the Reduction Date, and Tenant then cures the applicable default in accordance with the terms and conditions of this Lease and no other default then exists or otherwise satisfies the Reduction Conditions, then, subject to the provisions set forth in this paragraph, Tenant shall have the right to resubmit the request for the applicable reduction pursuant to the term and conditions set forth above. The Security Deposit, as it may be reduced in accordance with the foregoing, shall continue to be held by Landlord throughout the Lease Term. In no event shall the Security Deposit be less than $1,376,550.00.

Section 17.08. Entire Agreement; No Representations; Modification.

This Lease is intended by the parties to be a final expression of their agreement and as a complete and exclusive statement of the terms thereof. All prior negotiations, considerations and representations between the parties (oral or written) are incorporated herein. No course of prior dealings between the parties or their officers, employees, agents or affiliates shall be relevant or admissible to supplement, explain or vary any of the terms of this Lease. No representations, understandings, agreements, warranties or promises with respect to the Leased Premises, the Building, the Project or with respect to past, present or future tenancies, rents, expenses, operations, or any other matter, have been made or relied upon in the making of this Lease, other than those specifically set forth herein. This Lease may only be modified, or a term thereof waived, by a writing signed by an authorized officer of Landlord and Tenant expressly setting forth said modification or waiver.

Section 17.09. Severability.

If any term or provision of this Lease, or the application thereof to any Person or circumstance, shall be invalid or unenforceable, the remainder of this Lease, or the application of such term or provision to Persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of this Lease shall be valid and be enforced to the fullest extent permitted by law.

Section 17.10. Joint and Several Liability.

If two or more Persons shall sign this Lease as Tenant, the liability of each such Person to pay the Rent and perform all other obligations hereunder shall be deemed to be joint and several, and all Notices, payments and agreements given or made by, with or to any one of such Persons shall be deemed to have been given or made by, with or to all of them. In like manner, if Tenant shall be a partnership or other legal entity, the partners or members of which are, by virtue of any applicable law, rule, or regulation, subject to personal liability, the liability of each such partner or member under this Lease shall be joint and several and each such partner or member shall be fully obligated hereunder and bound hereby as if each such partner or member had personally signed this Lease.

Section 17.11. Broker's Commission.

Landlord and Tenant each warrants and represents to the other that no broker, finder or agent has acted for or on its behalf in connection with the negotiation, execution or procurement of this Lease, other than the Broker if any named in Section 1.01.P. hereof, Landlord and Tenant each agrees to indemnify and hold the other harmless from and against all liabilities, obligations and damages arising, directly or indirectly, out of or in connection with a claim from a broker, finder or agent other than the Broker with respect to this Lease or the negotiation thereof, including costs and attorneys' fees incurred in the defense of any claim made by a broker alleging to have performed services on behalf of the indemnifying party. Landlord shall pay a brokerage commission to the Broker pursuant to a separate agreement between Landlord and the Broker.

Section 17.12. Offer; No Option; Counterpart.

The submission of this Lease by Landlord to Tenant for examination shall not constitute an offer to lease or a reservation of or option for the Leased Premises and this Lease shall become effective only upon execution thereof by both parties and delivery thereof to Tenant. This Lease may be executed in any number of counterparts, each of which shall for all purposes be deemed an original and all of which together shall constitute one and the same instrument, and shall be effective upon execution of one or more such counterparts by each of the parties hereto and delivery thereof to the other parties hereto. Moreover, signatures received by facsimile or portable document format shall be deemed effective for the purposes of this Lease.

Section 17.13. Inability to Perform.

Except for the payment of monetary obligations and Tenant's obligations under Exhibit B and Tenant's obligation to vacate at the expiration or earlier termination of the Term, if Landlord or Tenant is delayed or prevented from performing any of its obligations under this Lease by reason of fire, casualty, war, riot, mob violence, strike, labor troubles, national or regional supply shortage not particular to the Building or the work project, pandemic, epidemic or other public health emergency, Act of God or any similar cause whatsoever beyond their control (a "**Force Majeure Delay**"), the period of such delay or such prevention shall be deemed added to the time herein provided for the performance of any such obligation by Landlord or Tenant. Delays or failures to perform resulting from lack of funds shall not be deemed delays beyond the reasonable control of either party. In order to exercise the rights granted by this Section 17.13, the delayed party agrees to deliver to the other party reasonable documentation of the reason for such delay or preventions.

Section 17.14. Survival.

Occurrence of the Termination Date shall not relieve Landlord or Tenant from their respective obligations accruing prior to the expiration of the Term or for any indemnification obligations of such party set forth in this Lease. All such obligations and indemnities shall survive termination of this Lease.

Section 17.15. Corporate Tenants.

If Tenant is not an individual, Tenant hereby covenant(s) and warrant(s) that: (i) Tenant is duly formed, qualified to do business and in good standing in the state in which the Building is

located; and (ii) the individual(s) executing this Lease on behalf of Tenant are duly authorized by Tenant to execute and deliver this Lease on behalf of Tenant. Tenant shall remain qualified to do business and in good standing in said state throughout the Term.

Section 17.16. Construction of Certain Terms.

The term "including" shall mean in all cases "including, without limitation." Wherever Tenant is required to perform any act hereunder, such party shall do so at its sole cost and expense, unless expressly provided otherwise. All payments to Landlord, other than Minimum Rent, whether as reimbursement or otherwise, shall be deemed to be Additional Rent, regardless of whether denominated as "**Additional Rent**." There shall be no presumption that this Lease be construed more strictly against the party who itself or through its agent prepared it, it being agreed that all parties hereto have participated in the preparation of this Lease and that each party had the opportunity to consult legal counsel before the execution of this Lease.

Section 17.17. Relationship of Parties.

This Lease shall not create any relationship between the parties other than that of Landlord and Tenant.

Section 17.18. Rule Against Perpetuities.

Notwithstanding any provision in this Lease to the contrary, if the Term has not commenced within twenty-one (21) years after the date of this Lease, this Lease shall automatically terminate on the twenty-first (21st) anniversary of the date of this Lease. The sole purpose of this provision is to avoid any possible interpretation of this Lease as violating the Rule Against Perpetuities, or any other rule of law or equity concerning restraints on alienation.

Section 17.19. Choice of Law.

This Lease shall be construed, and all disputes, claims, and questions arising hereunder shall be determined, in accordance with the laws of the state within which the Building is located.

Section 17.20. Choice of Forum.

Any action involving a dispute relating in any manner to this Lease, the relationship of Landlord/Tenant, the use or occupancy of the Leased Premises, and/or any claim of injury or damage shall be filed and adjudicated solely in the state or federal courts of the jurisdiction in which the Leased Premises are located.

Section 17.21. Hazardous Substances.

No Hazardous Substances (as hereafter defined) shall be used, generated, stored, treated, released, disposed or otherwise managed by or on behalf of Tenant or any invitee at the Leased Premises, the Building, or the Project with the exception of customary amounts of Hazardous Substances customarily and lawfully used in conjunction with the Permitted Use so long as the same are used, stored, and disposed of in accordance with all laws, rules, regulations and ordinances. Tenant shall promptly notify Landlord upon discovery of any Hazardous Substance release affecting the Leased Premises, Building, or Project and, at its sole expense and at Landlord's option, remediate to Landlord's satisfaction or reimburse Landlord's costs of investigation or remediation of any release of Hazardous Substances arising from any act or

omission of Tenant, its employees, agents, contractors or invitees within five (5) days of demand therefor. Tenant shall cooperate with Landlord and provide access to the Leased Premises from time to time for inspections and assessments of environmental conditions and shall remove all Hazardous Substances from the Leased Premises upon expiration or termination of the Lease. Tenant agrees to indemnify, defend and hold Landlord and Landlord's Indemnitees harmless from and against all liabilities, obligations, damages, judgments, penalties, claims, costs, charges and expenses, including reasonable architects' and attorneys' fees, which may be imposed upon, incurred by, or asserted against Landlord or Landlord's Indemnitees and arising, directly or indirectly, out of or in connection with the presence of Hazardous Substances at or affecting the Building or Project due to any act of Tenant, its agents, servants, employees or contractors. As used herein, "**Hazardous Substances**" shall mean (i) hazardous or toxic substances, wastes, materials, pollutants and contaminants which are included in or regulated by any federal, state or local law, regulation, rule or ordinance, including CERCLA, Superfund Amendments and Reauthorization Act of 1986, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act, as any of the foregoing may be amended from time to time, (ii) petroleum products, (iii) halogenated and non-halogenated solvents, (iv) petroleum and petroleum-based products, and (v) all other regulated chemicals, materials and solutions which, alone or in combination with other substances, are potentially harmful to the environment, public health or safety or natural resources.

Landlord shall deliver the Leased Premises to Tenant free and clear of any Hazardous Substances which are in violation of any applicable Legal Requirements. If (a) Hazardous Substances subsequently are discovered to have been in the Leased Premises as of the Term Commencement Date in violation of applicable Legal Requirements, and (b) as of the Term Commencement Date such substances or materials were deemed pursuant to applicable Legal Requirements to constitute Hazardous Substances, then, unless such Hazardous Substances were brought into the Building, or such release was caused, by Tenant, or Tenant's agents, employees or contractors, Landlord shall, at Landlord's sole cost and expense, remove or remediate such Hazardous Substance when, as and if required by applicable Legal Requirements.

Section 17.22. OFAC Certification.

Tenant certifies that: (i) it is not acting, directly or indirectly, for or on behalf of any person, group entity, or nation named by any Executive Order or the United States Treasury Department as a terrorist, "Specially Designated National and Blocked Person," or other banned or blocked person, entity, nation, or transaction pursuant to any law, order, rule or regulation that is enforced or administered by the Office of Foreign Assets Control; and (ii) it is not engaging in, instigating or facilitating this transaction, directly or indirectly, on behalf of any such person, group, entity, or nation.

Tenant hereby agrees to defend, indemnify, and hold harmless Landlord from and against any and all claims, damages, losses, risks, liabilities, and expenses (including attorneys' fees and costs) arising from or related to any breach of the foregoing certification.

Section 17.23. Counterparts.

This Lease may be executed in one or more counterparts, each of which shall be deemed an original, and all of which shall constitute one and the same instrument. Moreover, signatures

received by facsimile or portable document format shall be deemed effective for the purposes of this Lease.

Section 17.24. Master Development and Condominium.

It is specifically understood and agreed that the Leased Premises is subject and subordinate to a master development regime and may be subject and subordinate in the future to a condominium regime and that the Lease and Tenant's use of the Leased Premises, the Common Areas and the Project shall be subject and subordinate to the provisions, terms, covenants, conditions and restrictions, as amended from time to time contained in the REA and, if applicable, the Condominium Documents, provided there is no Tenant Adverse Impact as a result of the submission of the Building to a Condominium regime. In the event of a conflict between the Lease and the REA, the REA shall control.

Section 17.25. Financial Statements.

Tenant, upon written request by Landlord, will provide Landlord with a copy of its most recent financial statements, consisting of a Balance Sheet, Earnings Statement, Statement of Changes in Cash Flow, and related footnotes, prepared in accordance with generally accepted accounting principles; provided, however, Landlord shall not request such financial statements more than once in any twelve (12) month period except in connection with a sale or financing of the Building or unless there is a default of Tenant. Such financial statements must be either certified by a certified public accountant or sworn to as to their accuracy and completeness by Tenant's chief financial officer. The financial statements provided must be as of a date not more than twelve (12) months prior to the date of request. Landlord shall retain such statements in confidence, but may provide copies to any lender, potential lender, purchaser or potential purchaser in connection with a financing or potential financing or sale or potential sale of the Building, any portion of the Project, or any interest therein or in Landlord. Notwithstanding the foregoing, the foregoing obligation shall be waived for Tenant during any period of time in which the respective entity is an entity whose outstanding voting stock is listed on a national securities exchange (as defined in the Securities Exchange Act of 1934, as amended) and such information is publicly available.

Section 17.26. Infrastructure Agreement and Reporting Requirements

To assist in financing the Master Assembly Row Development, Landlord has entered into an Infrastructure Investment Incentive Program Agreement with the City of Somerville and the Commonwealth of Massachusetts ("**Commonwealth**") (the "**I-Cubed Agreement**"). To satisfy certain requirements of the I-Cubed Agreement, Landlord is required to provide to the Commonwealth certain information which the Commonwealth requires to be obtained from tenants of the Project (the "**Required Information**"). Tenant agrees, within thirty (30) days after Landlord's written request therefor (such request not to be made more frequently than once per calendar year), to deliver to Landlord the following information to the extent required under the I-Cubed Agreement: (i) taxpayer id number, and (ii) subject to privacy laws, approximate salaries and other forms of compensation payable to office workers in the Premises; provided, however, that Landlord agrees to keep all such information confidential and to use the same only to the extent required under the I-Cubed Agreement; and provided further, however, that in no event shall Tenant be required to provide any information that would allow Landlord or other

parties to determine specific identification characteristics of any individual including without limitation any such individual's salary or other compensation, race, color, national or ethnic origin, religion, sex, sexual orientation, gender identity, or any other such identifying characteristic. If Tenant fails to deliver the Required Information within such 30-day period and such failure continues for more than thirty (30) days after Tenant's receipt of a written notice from Landlord of such failure, then the failure to do so shall constitute a Default by Tenant hereunder, entitling Landlord to all remedies set forth in Section 16.02 hereof.

Section 17.27. Activity and Use Limitations.

Notice is hereby given, and reference is hereby made, of the following Notice of Activity and Use Limitations ("**AUL**"):

(i) that certain AUL given by Street Retail, Inc., recorded with the Middlesex South County Registry of Deeds (the "Registry") in Book 59076, Page 125, on May 11, 2012, as amended by Street Retail, Inc., pursuant to that certain First Amendment to Notice of Activity and Use Limitation, recorded with the Registry in Book 67711, Page 236, on July 29, 2016; (ii) that certain AUL given by Street Retail, Inc., in its individual capacity and as authorized signatory on behalf of SRI Assembly Row B2, LLC, SRI Assembly Row B3, LLC, SRI Assembly Row B5, LLC, SRI Assembly Row B6, LLC, SRI Assembly Row B7, LLC, SRI Assembly Row B8, LLC, SRI Assembly Row B9, LLC, and FR Sturtevant Street, LLC recorded with the Registry in Book 59076, Page 146 on May 11, 2012, as amended by Street Retail, Inc., pursuant to that certain First Amendment to Notice of Activity and Use Limitation, recorded with the Registry in Book 67711, Page 248, on July 29, 2016, and as further amended by Street Retail, Inc., pursuant to that certain Second Amendment to Notice of Activity and Use Limitation, recorded with the Registry in Book 67711, Page 264, on July 29, 2016; (iii) that certain AUL given by Street Retail, Inc., in its individual capacity and as authorized signatory on behalf of SRI Assembly Row B2, LLC, SRI Assembly Row B3, LLC, SRI Assembly Row B5, LLC, SRI Assembly Row B6, LLC, SRI Assembly Row B7, LLC, SRI Assembly Row B8, LLC, SRI Assembly Row B9, LLC, and FR Sturtevant Street, LLC, recorded with the Registry in Book 59076, Page 230 on May 11, 2012, as amended by Street Retail, Inc., pursuant to that certain First Amendment to Notice of Activity and Use Limitation, recorded with the Registry in Book 67711, Page 314, on July 29, 2016; (iv) that certain AUL given by Street Retail, Inc. recorded with the Registry in Book 59076, Page 95 on May 11, 2012, as amended by Street Retail, Inc. pursuant to that certain First Amendment to Notice of Activity and Use Limitation, recorded with the Registry in Book 67711, Page 282, on July 29, 2016, and as further amended by Street Retail, Inc., pursuant to that certain Second Amendment to Notice of Activity and Use Limitation, recorded with the Registry in Book 67711, Page 297, on July 29, 2016; (v) that certain AUL given by Street Retail, Inc., in its individual capacity and as authorized signatory on behalf of SRI Assembly Row B2, LLC, SRI Assembly Row B3, LLC, SRI Assembly Row B5, LLC, SRI Assembly Row B6, LLC, SRI Assembly Row B7, LLC, SRI Assembly Row B8, LLC, SRI Assembly Row B9, LLC, and FR Sturtevant Street, LLC, recorded with the Registry in Book 59706, Page 192 on May 11, 2012; (vi) that certain AUL given by Street Retail, Inc., in its individual capacity and as authorized signatory on behalf of SRI Assembly Row B2, LLC, SRI Assembly Row B3, LLC, SRI Assembly Row B5, LLC, SRI Assembly Row B6, LLC, SRI Assembly Row B7, LLC, SRI Assembly Row B8, LLC, SRI Assembly Row B9, LLC, and FR

Sturtevant Street, LLC recorded with the Registry in Book 59076, Page 173 on May 11, 2012; (vii) that certain AUL given by the Commonwealth of Massachusetts, acting by and through the Commissioner of its Department of Conservation and Recreation recorded with the Registry in Book 58823, Page 79 on April 3, 2012; (viii) that certain AUL given by FR Sturtevant Street, LLC and recorded with the Registry in Book 53648, Page 514 on October 7, 2009; (ix) that certain AUL given by Assembly Square Mall, LLC and recorded with the Registry in Book 27855, Page 507 on November 7, 1997, as affected by that certain First Amendment to AUL recorded with the Registry in Book 30342, Page 64 on June 25, 1999 and that certain Second Amendment to AUL recorded with the Registry in Book 48437, Page 386 on November 3, 2006; (x) that certain AUL given by Street Retail, Inc., in its individual capacity and as authorized signatory on behalf of SRI Assembly Row B2, LLC, SRI Assembly Row B3, LLC, SRI Assembly Row B5, LLC, SRI Assembly Row B6, LLC, SRI Assembly Row B7, LLC, SRI Assembly Row B8, LLC, SRI Assembly Row B9, LLC, and FR Sturtevant Street, LLC recorded with the Registry in Book 58176, Page 339 on December 28, 2011; and (xi) that certain AUL given by Street Retail, Inc., in its individual capacity and as authorized signatory on behalf of SRI Assembly Row B2, LLC, SRI Assembly Row B3, LLC, SRI Assembly Row B5, LLC, SRI Assembly Row B6, LLC, SRI Assembly Row B7, LLC, SRI Assembly Row B8, LLC, SRI Assembly Row B9, LLC, and FR Sturtevant Street, LLC recorded with the Registry in Book 61179, Page 474 on May 1, 2013.

ARTICLE XVIII

RIGHT OF FIRST OFFER TO LEASE

Section 18.01. Right of First Offer to Lease.

The parties acknowledge that simultaneously with the execution and delivery of this Lease, SRI ASSEMBLY ROW B7, LLC, a Delaware limited liability company, and Tenant have entered into that certain ROFO to Lease Agreement with respect to Block 7 in the form attached hereto as Exhibit F.

[Signatures appear on following page.]

IN WITNESS WHEREOF, the parties hereto intending to be legally bound hereby have executed this Lease as of the day and year first above written.

LANDLORD:

ASSEMBLY ROW 5B, LLC,
a Delaware limited liability company

By: /s/ Deborah A. Colson
Name: Deborah A. Colson
Title: Senior Vice President - Legal Operations

TENANT:

BLUEBIRD BIO, INC.,
a Delaware corporation

By: /s/ Tom Provencher
Name: Tom Provencher
Title: VP, Operational Excellence

Exhibit 10.31

EMPLOYMENT AGREEMENT

This Employment Agreement ("**Agreement**") is between bluebird bio, Inc., a Delaware corporation (the "**Company**"), and Andrew Obenshain (the "**Executive**") and is made effective as of January 7, 2021 (the "**Effective Date**").

WHEREAS, the Company and Employee are parties to that certain letter agreement dated as of December 15, 2016 relating to the Company's employment of the Executive, that certain letter agreement dated as of December 15, 2016 relating to certain severance arrangements, and that certain letter agreement dated as of February 12, 2019 relating to your return to the United States from Switzerland (collectively, the "**Prior Agreement**");

WHEREAS, the Company desires to employ the Executive and the Executive desires to be employed by the Company on the terms and conditions contained herein, thereby replacing the Prior Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Employment.

(a) Term. The term of this Agreement shall commence on the Effective Date and shall continue until terminated in accordance with the provisions of Section 3 (the "**Term**").

(b) Position and Duties. During the Term, the Executive shall serve as the Company's President, Severe Genetic Disease, and shall have such powers and duties as may from time to time be prescribed by the Chief Executive Officer of the Company (the "**CEO**") or other authorized executive, provided that such duties are consistent with the Executive's position or other positions that they may hold from time to time. The Executive shall report to the CEO. The Executive shall devote his full working time and efforts to the business and affairs of the Company. Notwithstanding the foregoing, the Executive may serve on the board of directors of another company, with the prior written approval of the Company's Board of Directors (the "**Board**"), and may engage in religious, charitable or other community activities as long as such services and activities do not pose a conflict of interest or interfere with the Executive's performance of his duties to the Company as provided in this Agreement.

2. Compensation and Related Matters.

(a) Base Salary. The Executive's base salary rate shall be $435,000 per year, effective October 19, 2020. The Executive's base salary shall be re-determined annually by the Board or the Compensation Committee of the Board of Directors (the "**Compensation Committee**"). The annual base salary rate in effect at any given time is referred to herein as

"**Base Salary**." The Executive's Base Salary shall be payable in a manner that is consistent with the Company's usual payroll practices for senior executives.

(b) Incentive Compensation. The Executive shall be eligible to receive cash incentive compensation as determined by the Board or the Compensation Committee from time to time. The Executive's target annual incentive compensation shall be forty five percent (45%) of his Base Salary, although any the actual incentive compensation amount shall be discretionary. To earn incentive compensation, the Executive must be employed by the Company on the day such incentive compensation is paid.

(c) Expenses. The Executive shall be entitled to receive prompt reimbursement for all reasonable expenses incurred by him during the Term in performing services hereunder, in accordance with the policies and procedures then in effect and established by the Company for its senior executive officers.

(d) Other Benefits. During the Term, the Executive shall be eligible to participate in or receive benefits under the Company's employee benefit plans in effect from time to time, subject to the terms and conditions of such plans.

(e) Vacations. During the Term, the Executive shall be entitled to accrue paid vacation in accordance with the Company's applicable policy.

3. Termination. During the Term, the Executive's employment hereunder may be terminated without any breach of this Agreement under the following circumstances:

(a) Death. The Executive's employment hereunder shall terminate upon his death.

(b) Disability. The Company may terminate the Executive's employment if he is disabled and unable to perform the essential functions of the Executive's then existing position or positions under this Agreement with or without reasonable accommodation for a period of 180 days (which need not be consecutive) in any 12-month period. If any question shall arise as to whether during any period the Executive is disabled so as to be unable to perform the essential functions of the Executive's then existing position or positions with or without reasonable accommodation, the Executive may, and at the request of the Company shall, submit to the Company a certification in reasonable detail by a physician selected by the Company to whom the Executive or the Executive's guardian has no reasonable objection as to whether the Executive is so disabled or how long such disability is expected to continue, and such certification shall for the purposes of this Agreement be conclusive of the issue. The Executive shall cooperate with any reasonable request of the physician in connection with such certification. If such question shall arise and the Executive shall fail to submit such certification, the Company's determination of such issue shall be binding on the Executive. Nothing in this Section 3(b) shall be construed to waive the Executive's rights, if any, under existing law including, without limitation, the Family and Medical Leave Act of 1993, 29 U.S.C. §2601 et seq. and the Americans with Disabilities Act, 42 U.S.C. §12101 et seq.

(c) Termination by Company for Cause. The Company may terminate the Executive's employment hereunder for Cause. For purposes of this Agreement, "**Cause**" shall mean: (i) the Executive's dishonest statements or acts with respect to the Company, any affiliate of the Company or any of the Company's current or prospective customers, suppliers, vendors or other third parties with which such entity does business; (ii) the Executive's commission of a felony or any misdemeanor involving moral turpitude, deceit, dishonesty or fraud; (iii) the Executive's failure to perform his assigned duties to the reasonable satisfaction of the Company, which failure, if curable, continues, in the reasonable judgment of the Company, after written notice given to the Executive by the Company; (iv) the Executive's gross negligence, willful misconduct or insubordination with respect to the Company or any affiliate of the Company; or (v) the Executive's violation of any provision of any agreement(s) between the Executive and the Company relating to noncompetition, nondisclosure and/or assignment of inventions.

(d) Termination Without Cause. The Company may terminate the Executive's employment hereunder at any time without Cause. Any termination by the Company of the Executive's employment under this Agreement which does not constitute a termination for Cause under Section 3(c) and does not result from the death or disability of the Executive under Section 3(a) or (b) shall be deemed a termination without Cause.

(e) Termination by the Executive. The Executive may terminate his employment hereunder at any time for any reason, including but not limited to Good Reason. For purposes of this Agreement, "**Good Reason**" shall mean that the Executive has complied with the "Good Reason Process" (hereinafter defined) following the occurrence of any of the following events without the Executive's express written consent: (i) a material diminution in the Executive's responsibilities, authority and function; (ii) a material reduction in the Executive's Base Salary except pursuant to a salary reduction program affecting substantially all of the employees of the Company, provided, that it does not adversely affect the Executive to a greater extent than other similarly situated employees and, provided further, that any reduction in the Executive's Base Salary of more than ten percent (10%) shall constitute Good Reason; (iii) a material change of more than 30 miles in the geographic location at which the Executive must provide services to the Company (except for required travel on Company business to an extent substantially consistent with the Executive's usual business travel obligations); or (iv) the material breach by the Company of the Company's equity incentive plan or the stock option agreement governing the stock option granted to the Executive in connection with his hire (as described in the Prior Agreement) or any other material agreement between the Executive and the Company, if any, concerning the terms and conditions of the Executive's employment, benefits or compensation. "**Good Reason Process**" shall mean that (i) the Executive reasonably determines in good faith that a "Good Reason" condition has occurred; (ii) the Executive notifies the Company in writing of the first occurrence of the Good Reason condition within 60 days of the first occurrence of such condition; (iii) the Executive cooperates in good faith with the Company's efforts, for a period not less than 30 days following such notice (the "**Cure Period**") to remedy the condition; (iv) notwithstanding such efforts, the Good Reason condition continues to exist; and (v) the Executive terminates his employment within 60 days after the end of the Cure Period. If the Company cures the Good Reason condition during the Cure Period, Good Reason shall be deemed not to have occurred.

(f) Notice of Termination. Except for termination as specified in Section 3(a), any termination of the Executive's employment by the Company or any such termination by the Executive shall be communicated by written Notice of Termination to the other party hereto. For purposes of this Agreement, a "**Notice of Termination**" shall mean a notice which shall indicate the specific termination provision in this Agreement relied upon.

(g) Date of Termination. "**Date of Termination**" shall mean (i) if the Executive's employment is terminated by his death, the date of his death; (ii) if the Executive's employment is terminated on account of disability under Section 3(b) or by the Company for Cause under Section 3(c), the date on which Notice of Termination is given; (iii) if the Executive's employment is terminated by the Company under Section 3(d), the date on which a Notice of Termination is given; (iv) if the Executive's employment is terminated by the Executive under Section 3(e) without Good Reason, 30 days after the date on which a Notice of Termination is given, and (v) if the Executive's employment is terminated by the Executive under Section 3(e) with Good Reason, the date on which a Notice of Termination is given after the end of the Cure Period. Notwithstanding the foregoing, (A) in the event that the Executive gives a Notice of Termination to the Company, the Company may unilaterally accelerate the Date of Termination and such acceleration shall not result in a termination by the Company for purposes of this Agreement, and (B) in the event that the Company terminates the Executive's employment without Cause under Section 3(d), the Company may unilaterally accelerate the Date of Termination to any earlier effective date provided that the Company continues to pay the Executive the Base Salary for the 30-day period immediately following the date on which a Notice of Termination is given to the Executive.

4. Compensation Upon Termination.

(a) Termination Generally. If the Executive's employment with the Company is terminated for any reason, the Company shall pay or provide to the Executive (or to his authorized representative or estate) (i) any Base Salary earned through the Date of Termination, unpaid expense reimbursements, and unused vacation that accrued through the Date of Termination, such payments to be made on or before the time required by law but in no event more than 30 days after the Executive's Date of Termination; and (ii) any vested benefits the Executive may have under any employee benefit plan of the Company through the Date of Termination, which vested benefits shall be paid and/or provided in accordance with the terms of such employee benefit plans (collectively, the "**Accrued Benefit**").

(b) Termination by the Company Without Cause or by the Executive with Good Reason. During the Term, if the Executive's employment is terminated by the Company without Cause as provided in Section 3(d), or the Executive terminates his employment for Good Reason as provided in Section 3(e), then the Company shall pay the Executive his Accrued Benefit. In addition, subject to the Executive signing a separation agreement containing, among other provisions, a general release of claims in favor of the Company and related persons and entities, confidentiality, return of property and non-disparagement, in a form and manner satisfactory to the Company (the "**Separation Agreement and Release**") and the Separation Agreement and Release becoming fully effective, all within the time frame set forth in the Separation Agreement and Release:

(i) the Company shall pay the Executive an amount equal to one times the Executive's Base Salary (the "**Severance Amount**"); and

(ii) if the Executive was participating in the Company's group health plan immediately prior to the Date of Termination and elects COBRA health continuation, then the Company shall pay to the Executive a monthly cash payment for 12 months or the Executive's COBRA health continuation period, whichever ends earlier, in an amount equal to the monthly employer contribution that the Company would have made to provide health insurance to the Executive if the Executive had remained employed by the Company; and

(iii) the amounts payable under this Section 4(b) shall be paid out in substantially equal installments in accordance with the Company's payroll practice over 12 months commencing within 60 days after the Date of Termination; provided, however, that if the 60-day period begins in one calendar year and ends in a second calendar year, the Severance Amount shall begin to be paid in the second calendar year by the last day of such 60-day period; provided, further, that the initial payment shall include a catch-up payment to cover amounts retroactive to the day immediately following the Date of Termination. Each payment pursuant to this Agreement is intended to constitute a separate payment for purposes of Treasury Regulation Section 1.409A-2(b)(2).

(iv) The receipt of any severance payments or benefits pursuant to Section 4 will be subject to Executive not violating the Restrictive Covenant Agreement referenced in Section 7 of this Agreement and attached hereto as Exhibit A, the terms of which are hereby incorporated by reference. In the event Executive breaches the Restrictive Covenant Agreement, in addition to all other legal and equitable remedies, the Company shall have the right to terminate or suspend all continuing payments and benefits to which Executive may otherwise be entitled pursuant to Section 4 without affecting the Executive's release or Executive's obligations under the Separation Agreement and Release.

5. Change in Control Payment. The provisions of this Section 5 set forth certain terms of an agreement reached between the Executive and the Company regarding the Executive's rights and obligations upon the occurrence of a Change in Control of the Company. These provisions are intended to assure and encourage in advance the Executive's continued attention and dedication to his assigned duties and his objectivity during the pendency and after the occurrence of any such event. These provisions shall apply in lieu of, and expressly supersede, the provisions of Section 4(b) regarding severance pay and benefits upon a termination of employment, if such termination of employment occurs within 12 months after the occurrence of the first event constituting a Change in Control. These provisions shall terminate and be of no further force or effect beginning 12 months after the occurrence of a Change in Control.

(a) Change in Control. During the Term, if within 12 months after a Change in Control, the Executive's employment is terminated by the Company without Cause as

provided in Section 3(d) or the Executive terminates his employment for Good Reason as provided in Section 3(e), then, subject to the signing of the Separation Agreement and Release by the Executive and the Separation Agreement and Release becoming irrevocable, all within 60 days after the Date of Termination,

(i) the Company shall pay the Executive a lump sum in cash in an amount equal to one times the sum of (A) the Executive's current Base Salary (or the Executive's Base Salary in effect immediately prior to the Change in Control, if higher), plus (B) the Executive's Target Incentive Compensation. For purposes of this Agreement, "**Target Incentive Compensation**" shall mean the Executive's target annual incentive compensation as set forth in Section 2(b); and

(ii) notwithstanding anything to the contrary in any applicable option agreement or stock-based award agreement, all stock options and other stock-based awards granted to the Executive after the date of this Agreement shall immediately accelerate and become fully exercisable or nonforfeitable as of the Date of Termination. The treatment of stock options and other stock-based awards held by the Executive as of the date of this Agreement shall be governed by the terms of the applicable option agreement or other stock-based award agreement; and

(iii) if the Executive was participating in the Company's group health plan immediately prior to the Date of Termination and elects COBRA health continuation, then the Company shall pay to the Executive a monthly cash payment for 12 months or the Executive's COBRA health continuation period, whichever ends earlier, in an amount equal to the monthly employer contribution that the Company would have made to provide health insurance to the Executive if the Executive had remained employed by the Company; and

(iv) The amounts payable under this Section 5(a) shall be paid or commence to be paid within 60 days after the Date of Termination; provided, however, that if the 60-day period begins in one calendar year and ends in a second calendar year, such payment shall be paid or commence to be paid in the second calendar year by the last day of such 60-day period.

(b) Additional Limitation.

(i) Anything in this Agreement to the contrary notwithstanding, in the event that the amount of any compensation, payment or distribution by the Company to or for the benefit of the Executive, whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise, calculated in a manner consistent with Section 280G of the Internal Revenue Code of 1986, as amended (the "**Code**") and the applicable regulations thereunder (the "**Severance Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, the following provisions shall apply:

(A) If the Severance Payments, reduced by the sum of (1) the Excise Tax and (2) the total of the federal, state, and local income and

employment taxes payable by the Executive on the amount of the Severance Payments which are in excess of the Threshold Amount, are greater than or equal to the Threshold Amount, the Executive shall be entitled to the full benefits payable under this Agreement.

(B) If the Threshold Amount is less than (x) the Severance Payments, but greater than (y) the Severance Payments reduced by the sum of (1) the Excise Tax and (2) the total of the federal, state, and local income and employment taxes on the amount of the Severance Payments which are in excess of the Threshold Amount, then the Severance Payments shall be reduced (but not below zero) to the extent necessary so that the sum of all Severance Payments shall not exceed the Threshold Amount. In such event, the Severance Payments shall be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits. To the extent any payment is to be made over time (e.g., in installments, etc.), then the payments shall be reduced in reverse chronological order.

(ii) For the purposes of this Section 5(b), "**Threshold Amount**" shall mean three times the Executive's "**base amount**" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00); and "**Excise Tax**" shall mean the excise tax imposed by Section 4999 of the Code, and any interest or penalties incurred by the Executive with respect to such excise tax.

(iii) The determination as to which of the alternative provisions of Section 5(b)(i) shall apply to the Executive shall be made by a nationally recognized accounting firm selected by the Company (the "**Accounting Firm**"), which shall provide detailed supporting calculations both to the Company and the Executive within 15 business days of the Date of Termination, if applicable, or at such earlier time as is reasonably requested by the Company or the Executive. For purposes of determining which of the alternative provisions of Section 5(b)(i) shall apply, the Executive shall be deemed to pay federal income taxes at the highest marginal rate of federal income taxation applicable to individuals for the calendar year in which the determination is to be made, and state and local income taxes at the highest marginal rates of individual taxation in the state and locality of the Executive's residence on the Date of Termination, net of the maximum reduction in federal income taxes which could be obtained from deduction of such state and local taxes. Any determination by the Accounting Firm shall be binding upon the Company and the Executive.

(b) Definitions. For purposes of this Section 5, the following terms shall have the following meanings:

"**Change in Control**" shall mean "**Sale Event**," as such term is defined in the Company's 2013 Stock Option and Incentive Plan.

6. Section 409A.

(a) Anything in this Agreement to the contrary notwithstanding, if at the time of the Executive's separation from service within the meaning of Section 409A of the Code, the Company determines that the Executive is a "specified employee" within the meaning of Section 409A(a)(2)(B)(i) of the Code, then to the extent any payment or benefit that the Executive becomes entitled to under this Agreement on account of the Executive's separation from service would be considered deferred compensation otherwise subject to the 20 percent additional tax imposed pursuant to Section 409A(a) of the Code as a result of the application of Section 409A(a)(2)(B)(i) of the Code, such payment shall not be payable and such benefit shall not be provided until the date that is the earlier of (A) six months and one day after the Executive's separation from service, or (B) the Executive's death. If any such delayed cash payment is otherwise payable on an installment basis, the first payment shall include a catch-up payment covering amounts that would otherwise have been paid during the six-month period but for the application of this provision, and the balance of the installments shall be payable in accordance with their original schedule.

(b) All in-kind benefits provided and expenses eligible for reimbursement under this Agreement shall be provided by the Company or incurred by the Executive during the time periods set forth in this Agreement. All reimbursements shall be paid as soon as administratively practicable, but in no event shall any reimbursement be paid after the last day of the taxable year following the taxable year in which the expense was incurred. The amount of in-kind benefits provided or reimbursable expenses incurred in one taxable year shall not affect the in-kind benefits to be provided or the expenses eligible for reimbursement in any other taxable year (except for any lifetime or other aggregate limitation applicable to medical expenses). Such right to reimbursement or in-kind benefits is not subject to liquidation or exchange for another benefit.

(c) To the extent that any payment or benefit described in this Agreement constitutes "non-qualified deferred compensation" under Section 409A of the Code, and to the extent that such payment or benefit is payable upon the Executive's termination of employment, then such payments or benefits shall be payable only upon the Executive's "separation from service." The determination of whether and when a separation from service has occurred shall be made in accordance with the presumptions set forth in Treasury Regulation Section 1.409A-1(h).

(d) The parties intend that this Agreement will be administered in accordance with Section 409A of the Code. To the extent that any provision of this Agreement is ambiguous as to its compliance with Section 409A of the Code, the provision shall be read in such a manner so that all payments hereunder comply with Section 409A of the Code. Each payment pursuant to this Agreement is intended to constitute a separate payment for purposes of Treasury Regulation Section 1.409A-2(b)(2). The parties agree that this Agreement may be amended, as reasonably requested by either party, and as may be necessary to fully comply with Section 409A of the Code and all related rules and regulations in order to preserve the payments and benefits provided hereunder without additional cost to either party.

(e) The Company makes no representation or warranty and shall have no liability to the Executive or any other person if any provisions of this Agreement are determined to constitute deferred compensation subject to Section 409A of the Code but do not satisfy an exemption from, or the conditions of, such Section.

7. Confidential Information, Noncompetition and Cooperation. The Executive agrees to terms of the Assignment of Invention, Nondisclosure and Noncompetition Agreement ("**Restrictive Covenant Agreement**") attached to the Prior Agreement, the terms of which are hereby incorporated by reference as material terms of this Agreement. Nothing in this Agreement or the Restrictive Covenant Agreement, and nothing in any policy or procedure, in any other confidentiality, employment, separation agreement or in any other document or communication from the Company limits the Executive's ability to file a charge or complaint with any government agency concerning any acts or omissions that the Executive may believe constitute a possible violation of federal or state law or making other disclosures that are protected under the whistleblower provisions of applicable federal or state law regulation or affects the Executive's ability to communicate with any government agency or otherwise participate in any investigation or proceeding that may be conducted by a government agency, including by providing documents or other information, without notice to the Company. In addition, for the avoidance of doubt, pursuant to the federal Defend Trade Secrets Act of 2016, the Executive shall not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that (i) is made (A) in confidence to a federal, state, or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal.

8. Consent to Jurisdiction. The parties hereby consent to the jurisdiction of the Superior Court of the Commonwealth of Massachusetts and the United States District Court for the District of Massachusetts. Accordingly, with respect to any such court action, the Executive (a) submits to the personal jurisdiction of such courts; (b) consents to service of process; and (c) waives any other requirement (whether imposed by statute, rule of court, or otherwise) with respect to personal jurisdiction or service of process.

9. Integration. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements between the parties concerning such subject matter.

10. Withholding. All payments made by the Company to the Executive under this Agreement shall be net of any tax or other amounts required to be withheld by the Company under applicable law.

11. Successor to the Executive. This Agreement shall inure to the benefit of and be enforceable by the Executive's personal representatives, executors, administrators, heirs, distributees, devisees and legatees. In the event of the Executive's death after his termination of employment but prior to the completion by the Company of all payments due his under this Agreement, the Company shall continue such payments to the Executive's beneficiary

designated in writing to the Company prior to his death (or to his estate, if the Executive fails to make such designation).

12 Enforceability. If any portion or provision of this Agreement (including, without limitation, any portion or provision of any section of the Restrictive Covenant Agreement) shall to any extent be declared illegal or unenforceable by a court of competent jurisdiction, then the remainder of this Agreement, or the application of such portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, shall not be affected thereby, and each portion and provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

13. Survival. The provisions of this Agreement shall survive the termination of this Agreement and/or the termination of the Executive's employment to the extent necessary to effectuate the terms contained herein.

14. Waiver. No waiver of any provision hereof shall be effective unless made in writing and signed by the waiving party. The failure of any party to require the performance of any term or obligation of this Agreement, or the waiver by any party of any breach of this Agreement, shall not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

15. Notices. Any notices, requests, demands and other communications provided for by this Agreement shall be sufficient if in writing and delivered in person or sent by a nationally recognized overnight courier service or by registered or certified mail, postage prepaid, return receipt requested, to the Executive at the last address the Executive has filed in writing with the Company or, in the case of the Company, at its main offices, attention of the Board.

16. Amendment. This Agreement may be amended or modified only by a written instrument signed by the Executive and by a duly authorized representative of the Company.

17. Governing Law. This is a Massachusetts contract and shall be construed under and be governed in all respects by the laws of the Commonwealth of Massachusetts, without giving effect to the conflict of laws principles of such Commonwealth. With respect to any disputes concerning federal law, such disputes shall be determined in accordance with the law as it would be interpreted and applied by the United States Court of Appeals for the First Circuit.

18. Counterparts. This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be taken to be an original; but such counterparts shall together constitute one and the same document.

19. Successor to Company. The Company shall require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business or assets of the Company expressly to assume and agree to perform this Agreement to the same extent that the Company would be required to perform it if no succession had taken place. Failure of the Company to obtain an assumption of this Agreement at or prior to the effectiveness of any succession shall be a material breach of this Agreement.

20. Gender Neutral. Wherever used herein, a pronoun in the masculine gender shall be considered as including the feminine gender unless the context clearly indicates otherwise.

IN WITNESS WHEREOF, the parties have executed this Agreement effective on the date and year first above written.

BLUEBIRD BIO, INC.

By: /s/ Kathy Wilkinson
Kathy Wilkinson
Its: Chief People Officer

/s/ Andrew Obenshain
Andrew Obenshain

Exhibit A

Restrictive Covenant Agreement

Exhibit 10.32

EMPLOYMENT AGREEMENT

This Employment Agreement ("**Agreement**") is between bluebird bio, Inc., a Delaware corporation (the "**Company**"), and Gina Consylman (the "**Executive**") and is made effective as of June 1, 2021 (the "**Effective Date**").

WHEREAS, the Company desires to employ the Executive and the Executive desires to be employed by the Company on the terms and conditions contained herein.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Employment.

(a) Term. The term of this Agreement shall commence on a date to be mutually agreed to by the Executive and the Company, on or before August 2, 2021, and shall continue until terminated in accordance with the provisions of Section 3 (the "**Term**"). The actual first day of Executive's employment shall be referred to as the "**Start Date**").

(b) Position and Duties. During the Term, the Executive shall serve as the Company's Chief Financial Officer, Severe Genetic Diseases, and shall have such powers and duties as may from time to time be prescribed by the President, Severe Genetic Diseases or other authorized executive, provided that such duties are consistent with the Executive's position or other positions that they may hold from time to time. The Executive shall report to the President, Severe Genetic Diseases. The Executive shall devote their full working time and efforts to the business and affairs of the Company. Notwithstanding the foregoing, the Executive may serve on the board of directors of another company, with the prior written approval of the Company's Board of Directors (the "**Board**"), and may engage in religious, charitable or other community activities as long as such services and activities do not pose a conflict of interest or interfere with the Executive's performance of their duties to the Company as provided in this Agreement. The parties acknowledge that as of the Effective Date, the Executive is serving as a member of the board of directors of Verastem, Inc. and as a member of the audit committee and board of directors of Assembly Biosciences, Inc., and the Executive agrees that as of the Start Date, the Executive may serve on the board of directors of no more than one company.

2. Compensation and Related Matters.

(a) Base Salary. The Executive's base salary rate shall be $480,000 per year. The Executive's base salary shall be re-determined annually by the Board or the Compensation Committee of the Board of Directors (the "**Compensation Committee**"). The annual base salary rate in effect at any given time is referred to herein as "**Base Salary**." The Executive's Base Salary shall be payable in a manner that is consistent with the Company's usual payroll practices for senior executives.

(b) Incentive Compensation. The Executive shall be eligible to receive cash incentive compensation as determined by the Board or the Compensation Committee from time to time. The Executive's target annual incentive compensation shall be forty five percent (45%) of their Base Salary, although any the actual incentive compensation amount shall be discretionary. To earn incentive compensation, the Executive must be employed by the Company on the day such incentive compensation is paid.

(c) Equity. Subject to approval by the Board or the Compensation Committee, and as a material inducement to the Executive's acceptance of employment with the Company, the Executive shall be granted on the first trading day of the first calendar month following the Executive's Start Date: (i) an option to purchase 85,000 shares of Common Stock of the Company (the "**Option**"), and (ii) 50,000 restricted stock units (the "**RSUs**"). The Option shall have an exercise price equal to the closing price of the Company's common stock on the date of grant, and 25% shall vest and become exercisable on the first anniversary of the Start Date, and in equal monthly installments over the following three years, provided the Executive continues their employment through the applicable vesting date. The RSUs shall vest as follows, provided the Executive continues their employment through the applicable vesting date: 25% on the first anniversary of the date of grant, and in three equal annual installments for the following three years on the anniversaries of the date of grant. In the Company's sole discretion, the Option and the RSUs may be granted pursuant to the inducement grant exception set forth in NASDAQ Listing Rule 5635(c)(4).

(d) Expenses. The Executive shall be entitled to receive prompt reimbursement for all reasonable expenses incurred by then during the Term in performing services hereunder, in accordance with the policies and procedures then in effect and established by the Company for its senior executive officers.

(e) Other Benefits. During the Term, the Executive shall be eligible to participate in or receive benefits under the Company's employee benefit plans in effect from time to time, subject to the terms and conditions of such plans.

(f) Vacations. During the Term, the Executive shall be entitled to accrue paid vacation in accordance with the Company's applicable policy.

3. Termination. During the Term, the Executive's employment hereunder may be terminated without any breach of this Agreement under the following circumstances:

(a) Death. The Executive's employment hereunder shall terminate upon their death.

(b) Disability. The Company may terminate the Executive's employment if they are disabled and unable to perform the essential functions of the Executive's then existing position or positions under this Agreement with or without reasonable accommodation for a period of 180 days (which need not be consecutive) in any 12-month period. If any question shall arise as to whether during any period the Executive is disabled so as to be unable to perform the essential functions of the

Executive's then existing position or positions with or without reasonable accommodation, the Executive may, and at the request of the Company shall, submit to the Company a certification in reasonable detail by a physician selected by the Company to whom the Executive or the Executive's guardian has no reasonable objection as to whether the Executive is so disabled or how long such disability is expected to continue, and such certification shall for the purposes of this Agreement be conclusive of the issue. The Executive shall cooperate with any reasonable request of the physician in connection with such certification. If such question shall arise and the Executive shall fail to submit such certification, the Company's determination of such issue shall be binding on the Executive. Nothing in this Section 3(b) shall be construed to waive the Executive's rights, if any, under existing law including, without limitation, the Family and Medical Leave Act of 1993, 29 U.S.C. §2601 *et seq*. and the Americans with Disabilities Act, 42 U.S.C. §12101 *et seq.*

(c) Termination by Company for Cause. The Company may terminate the Executive's employment hereunder for Cause. For purposes of this Agreement, "**Cause**" shall mean: (i) the Executive's dishonest statements or acts with respect to the Company, any affiliate of the Company or any of the Company's current or prospective customers, suppliers, vendors or other third parties with which such entity does business; (ii) the Executive's commission of a felony or any misdemeanor involving moral turpitude, deceit, dishonesty or fraud; (iii) the Executive's failure to perform their assigned duties to the reasonable satisfaction of the Company, which failure, if curable, continues, in the reasonable judgment of the Company, after written notice given to the Executive by the Company; (iv) the Executive's gross negligence, willful misconduct or insubordination with respect to the Company or any affiliate of the Company; or (v) the Executive's violation of any provision of any agreement(s) between the Executive and the Company relating to noncompetition, nondisclosure and/or assignment of inventions.

(d) Termination Without Cause. The Company may terminate the Executive's employment hereunder at any time without Cause. Any termination by the Company of the Executive's employment under this Agreement which does not constitute a termination for Cause under Section 3(c) and does not result from the death or disability of the Executive under Section 3(a) or (b) shall be deemed a termination without Cause.

(e) Termination by the Executive. The Executive may terminate their employment hereunder at any time for any reason, including but not limited to Good Reason. For purposes of this Agreement, "**Good Reason**" shall mean that the Executive has complied with the "Good Reason Process" (hereinafter defined) following the occurrence of any of the following events without the Executive's express written consent: (i) a material diminution in the Executive's responsibilities, authority and function; (ii) a material reduction in the Executive's Base Salary except pursuant to a salary reduction program affecting substantially all of the employees of the Company, provided, that it does not adversely affect the Executive to a greater extent than other similarly situated employees and, provided further, that any reduction in the Executive's Base Salary of more than ten percent (10%) shall constitute Good Reason; (iii) a material change of more than 30 miles in the geographic location at which the Executive must provide services to the Company (except for required travel on Company business to an extent substantially consistent with the Executive's usual business travel obligations); or (iv) the material breach by the Company of the Company's agreements or equity incentive plan covering the Option or RSUs granted to the Executive in connection with their hire or any other material agreement between the Executive and the Company, if any, concerning the terms

and conditions of the Executive's employment, benefits or compensation. "**Good Reason Process**" shall mean that (i) the Executive reasonably determines in good faith that a "Good Reason" condition has occurred; (ii) the Executive notifies the Company in writing of the first occurrence of the Good Reason condition within 60 days of the first occurrence of such condition; (iii) the Executive cooperates in good faith with the Company's efforts, for a period not less than 30 days following such notice (the "**Cure Period**") to remedy the condition; (iv) notwithstanding such efforts, the Good Reason condition continues to exist; and (v) the Executive terminates their employment within 60 days after the end of the Cure Period. If the Company cures the Good Reason condition during the Cure Period, Good Reason shall be deemed not to have occurred.

(f) Notice of Termination. Except for termination as specified in Section 3(a), any termination of the Executive's employment by the Company or any such termination by the Executive shall be communicated by written Notice of Termination to the other party hereto. For purposes of this Agreement, a "**Notice of Termination**" shall mean a notice which shall indicate the specific termination provision in this Agreement relied upon.

(g) Date of Termination. "**Date of Termination**" shall mean: (i) if the Executive's employment is terminated by their death, the date of their death; (ii) if the Executive's employment is terminated on account of disability under Section 3(b) or by the Company for Cause under Section 3(c), the date on which Notice of Termination is given; (iii) if the Executive's employment is terminated by the Company under Section 3(d), the date on which a Notice of Termination is given; (iv) if the Executive's employment is terminated by the Executive under Section 3(e) without Good Reason, 30 days after the date on which a Notice of Termination is given, and (v) if the Executive's employment is terminated by the Executive under Section 3(e) with Good Reason, the date on which a Notice of Termination is given after the end of the Cure Period. Notwithstanding the foregoing, (A) in the event that the Executive gives a Notice of Termination to the Company, the Company may unilaterally accelerate the Date of Termination and such acceleration shall not result in a termination by the Company for purposes of this Agreement, and (B) in the event that the Company terminates the Executive's employment without Cause under Section 3(d), the Company may unilaterally accelerate the Date of Termination to any earlier effective date provided that the Company continues to pay the Executive the Base Salary for the 30-day period immediately following the date on which a Notice of Termination is given to the Executive.

4. Compensation Upon Termination.

(a) Termination Generally. If the Executive's employment with the Company is terminated for any reason, the Company shall pay or provide to the Executive (or to their authorized representative or estate) (i) any Base Salary earned through the Date of Termination, unpaid expense reimbursements, and unused vacation that accrued through the Date of Termination, such payments to be made on or before the time required by law but in no event more than 30 days after the Executive's Date of Termination; and (ii) any vested benefits the Executive may have under any employee benefit plan of the Company through the Date of Termination, which vested benefits shall be paid and/or provided in accordance with the terms of such employee benefit plans (collectively, the "**Accrued Benefit**").

(b) Termination by the Company Without Cause or by the Executive with Good Reason. During the Term, if the Executive's employment is terminated by the Company without Cause as provided in Section 3(d), or the Executive terminates their employment for Good Reason as provided in Section 3(e), then the Company shall pay the Executive their Accrued Benefit. In addition, subject to the Executive signing a separation agreement containing, among other provisions, a general release of claims in favor of the Company and related persons and entities, confidentiality, return of property and non-disparagement, in a form and manner satisfactory to the Company (the "**Separation Agreement and Release**") and the Separation Agreement and Release becoming fully effective, all within the time frame set forth in the Separation Agreement and Release:

(i) the Company shall pay the Executive an amount equal to one times the Executive's Base Salary (the "**Severance Amount**"); and

(ii) if the Executive was participating in the Company's group health plan immediately prior to the Date of Termination and elects COBRA health continuation, then the Company shall pay to the Executive a monthly cash payment for 12 months or the Executive's COBRA health continuation period, whichever ends earlier, in an amount equal to the monthly employer contribution that the Company would have made to provide health insurance to the Executive if the Executive had remained employed by the Company; and

(iii) the amounts payable under this Section 4(b) shall be paid out in substantially equal installments in accordance with the Company's payroll practice over 12 months commencing within 60 days after the Date of Termination; provided, however, that if the 60-day period begins in one calendar year and ends in a second calendar year, the Severance Amount shall begin to be paid in the second calendar year by the last day of such 60-day period; provided, further, that the initial payment shall include a catch-up payment to cover amounts retroactive to the day immediately following the Date of Termination. Each payment pursuant to this Agreement is intended to constitute a separate payment for purposes of Treasury Regulation Section 1.409A-2(b)(2).

(iv) The receipt of any severance payments or benefits pursuant to Section 4 will be subject to Executive not violating the Restrictive Covenant Agreement referenced in Section 7 of this Agreement and attached hereto as Exhibit A, the terms of which are hereby incorporated by reference. In the event Executive breaches the Restrictive Covenant Agreement, in addition to all other legal and equitable remedies, the Company shall have the right to terminate or suspend all continuing payments and benefits to which Executive may otherwise be entitled pursuant to Section 4 without affecting the Executive's release or Executive's obligations under the Separation Agreement and Release.

5. Change in Control Payment. The provisions of this Section 5 set forth certain terms of an agreement reached between the Executive and the Company regarding the Executive's rights and obligations upon the occurrence of a Change in Control of the Company. These provisions are intended to assure and encourage in advance the Executive's continued attention and dedication to their assigned duties and their objectivity during the pendency and after the occurrence of any such event. These provisions shall apply in lieu of, and expressly supersede, the provisions of Section 4(b) regarding severance pay and benefits upon a termination of employment, if such termination of

employment occurs within 12 months after the occurrence of the first event constituting a Change in Control. These provisions shall terminate and be of no further force or effect beginning 12 months after the occurrence of a Change in Control.

(a) Change in Control. During the Term, if within 12 months after a Change in Control, the Executive's employment is terminated by the Company without Cause as provided in Section 3(d) or the Executive terminates their employment for Good Reason as provided in Section 3(e), then, subject to the signing of the Separation Agreement and Release by the Executive and the Separation Agreement and Release becoming irrevocable, all within 60 days after the Date of Termination,

(i) the Company shall pay the Executive a lump sum in cash in an amount equal to one times the sum of (A) the Executive's current Base Salary (or the Executive's Base Salary in effect immediately prior to the Change in Control, if higher), plus (B) the Executive's Target Incentive Compensation. For purposes of this Agreement, "**Target Incentive Compensation**" shall mean the Executive's target annual incentive compensation as set forth in Section 2(b); and

(ii) notwithstanding anything to the contrary in any applicable option agreement or stock-based award agreement, all stock options and other stock-based awards granted to the Executive after the date of this Agreement shall immediately accelerate and become fully exercisable or nonforfeitable as of the Date of Termination. The treatment of stock options and other stock-based awards held by the Executive as of the date of this Agreement shall be governed by the terms of the applicable option agreement or other stock-based award agreement; and

(iii) if the Executive was participating in the Company's group health plan immediately prior to the Date of Termination and elects COBRA health continuation, then the Company shall pay to the Executive a monthly cash payment for 12 months or the Executive's COBRA health continuation period, whichever ends earlier, in an amount equal to the monthly employer contribution that the Company would have made to provide health insurance to the Executive if the Executive had remained employed by the Company; and

(iv) The amounts payable under this Section 5(a) shall be paid or commence to be paid within 60 days after the Date of Termination; provided, however, that if the 60-day period begins in one calendar year and ends in a second calendar year, such payment shall be paid or commence to be paid in the second calendar year by the last day of such 60-day period.

(b) Additional Limitation.

(i) Anything in this Agreement to the contrary notwithstanding, in the event that the amount of any compensation, payment or distribution by the Company to or for the benefit of the Executive, whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise, calculated in a manner consistent with Section 280G of the Internal Revenue Code of 1986, as amended (the "**Code**") and the applicable

regulations thereunder (the "**Severance Payments**"), would be subject to the excise tax imposed by Section 4999 of the Code, the following provisions shall apply:

(A) If the Severance Payments, reduced by the sum of (1) the Excise Tax and (2) the total of the federal, state, and local income and employment taxes payable by the Executive on the amount of the Severance Payments which are in excess of the Threshold Amount, are greater than or equal to the Threshold Amount, the Executive shall be entitled to the full benefits payable under this Agreement.

(B) If the Threshold Amount is less than (x) the Severance Payments, but greater than (y) the Severance Payments reduced by the sum of (1) the Excise Tax and (2) the total of the federal, state, and local income and employment taxes on the amount of the Severance Payments which are in excess of the Threshold Amount, then the Severance Payments shall be reduced (but not below zero) to the extent necessary so that the sum of all Severance Payments shall not exceed the Threshold Amount. In such event, the Severance Payments shall be reduced in the following order: (1) cash payments not subject to Section 409A of the Code; (2) cash payments subject to Section 409A of the Code; (3) equity-based payments and acceleration; and (4) non-cash forms of benefits. To the extent any payment is to be made over time (e.g., in installments, etc.), then the payments shall be reduced in reverse chronological order.

(ii) For the purposes of this Section 5(b), "**Threshold Amount**" shall mean three times the Executive's "**base amount**" within the meaning of Section 280G(b)(3) of the Code and the regulations promulgated thereunder less one dollar ($1.00); and "**Excise Tax**" shall mean the excise tax imposed by Section 4999 of the Code, and any interest or penalties incurred by the Executive with respect to such excise tax.

(iii) The determination as to which of the alternative provisions of Section 5(b)(i) shall apply to the Executive shall be made by a nationally recognized accounting firm selected by the Company (the "**Accounting Firm**"), which shall provide detailed supporting calculations both to the Company and the Executive within 15 business days of the Date of Termination, if applicable, or at such earlier time as is reasonably requested by the Company or the Executive. For purposes of determining which of the alternative provisions of Section 5(b)(i) shall apply, the Executive shall be deemed to pay federal income taxes at the highest marginal rate of federal income taxation applicable to individuals for the calendar year in which the determination is to be made, and state and local income taxes at the highest marginal rates of individual taxation in the state and locality of the Executive's residence on the Date of Termination, net of the maximum reduction in federal income taxes which could be obtained from deduction of such state and local taxes. Any determination by the Accounting Firm shall be binding upon the Company and the Executive.

(b) Definitions. For purposes of this Section 5, the following terms shall have the following meanings:

"**Change in Control**" shall mean "**Sale Event**," as such term is defined in the Company's 2013 Stock Option and Incentive Plan.

6. Section 409A.

(a) Anything in this Agreement to the contrary notwithstanding, if at the time of the Executive's separation from service within the meaning of Section 409A of the Code, the Company determines that the Executive is a "specified employee" within the meaning of Section 409A(a)(2)(B)(i) of the Code, then to the extent any payment or benefit that the Executive becomes entitled to under this Agreement on account of the Executive's separation from service would be considered deferred compensation otherwise subject to the 20 percent additional tax imposed pursuant to Section 409A(a) of the Code as a result of the application of Section 409A(a)(2)(B)(i) of the Code, such payment shall not be payable and such benefit shall not be provided until the date that is the earlier of (A) six months and one day after the Executive's separation from service, or (B) the Executive's death. If any such delayed cash payment is otherwise payable on an installment basis, the first payment shall include a catch-up payment covering amounts that would otherwise have been paid during the six-month period but for the application of this provision, and the balance of the installments shall be payable in accordance with their original schedule.

(b) All in-kind benefits provided and expenses eligible for reimbursement under this Agreement shall be provided by the Company or incurred by the Executive during the time periods set forth in this Agreement. All reimbursements shall be paid as soon as administratively practicable, but in no event shall any reimbursement be paid after the last day of the taxable year following the taxable year in which the expense was incurred. The amount of in-kind benefits provided or reimbursable expenses incurred in one taxable year shall not affect the in-kind benefits to be provided or the expenses eligible for reimbursement in any other taxable year (except for any lifetime or other aggregate limitation applicable to medical expenses). Such right to reimbursement or in-kind benefits is not subject to liquidation or exchange for another benefit.

(c) To the extent that any payment or benefit described in this Agreement constitutes "non-qualified deferred compensation" under Section 409A of the Code, and to the extent that such payment or benefit is payable upon the Executive's termination of employment, then such payments or benefits shall be payable only upon the Executive's "separation from service." The determination of whether and when a separation from service has occurred shall be made in accordance with the presumptions set forth in Treasury Regulation Section 1.409A-1(h).

(d) The parties intend that this Agreement will be administered in accordance with Section 409A of the Code. To the extent that any provision of this Agreement is ambiguous as to its compliance with Section 409A of the Code, the provision shall be read in such a manner so that all payments hereunder comply with Section 409A of the Code. Each payment pursuant to this Agreement is intended to constitute a separate payment for purposes of Treasury Regulation Section 1.409A-2(b)(2). The parties agree that this Agreement may be amended, as reasonably requested by either party, and as may be necessary to fully comply with Section 409A of the Code and all related rules and regulations in order to preserve the payments and benefits provided hereunder without additional cost to either party.

(e) The Company makes no representation or warranty and shall have no liability to the Executive or any other person if any provisions of this Agreement are determined to constitute deferred compensation subject to Section 409A of the Code but do not satisfy an exemption from, or the conditions of, such Section.

7. Confidential Information, Noncompetition and Cooperation. The Executive agrees to terms of the Assignment of Invention, Nondisclosure and Noncompetition Agreement ("**Restrictive Covenant Agreement**") attached hereto, the terms of which are hereby incorporated by reference as material terms of this Agreement. Nothing in this Agreement or the Restrictive Covenant Agreement, and nothing in any policy or procedure, in any other confidentiality, employment, separation agreement or in any other document or communication from the Company limits the Executive's ability to file a charge or complaint with any government agency concerning any acts or omissions that the Executive may believe constitute a possible violation of federal or state law or making other disclosures that are protected under the whistleblower provisions of applicable federal or state law regulation or affects the Executive's ability to communicate with any government agency or otherwise participate in any investigation or proceeding that may be conducted by a government agency, including by providing documents or other information, without notice to the Company. In addition, for the avoidance of doubt, pursuant to the federal Defend Trade Secrets Act of 2016, the Executive shall not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that (i) is made (A) in confidence to a federal, state, or local government official, either directly or indirectly, or to an attorney; and (B) solely for the purpose of reporting or investigating a suspected violation of law; or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal.

8. Consent to Jurisdiction. The parties hereby consent to the jurisdiction of the Superior Court of the Commonwealth of Massachusetts and the United States District Court for the District of Massachusetts. Accordingly, with respect to any such court action, the Executive (a) submits to the personal jurisdiction of such courts; (b) consents to service of process; and (c) waives any other requirement (whether imposed by statute, rule of court, or otherwise) with respect to personal jurisdiction or service of process.

9. Integration. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements between the parties concerning such subject matter.

10. Withholding. All payments made by the Company to the Executive under this Agreement shall be net of any tax or other amounts required to be withheld by the Company under applicable law.

11. Successor to the Executive. This Agreement shall inure to the benefit of and be enforceable by the Executive's personal representatives, executors, administrators, heirs, distributees, devisees and legatees. In the event of the Executive's death after their termination of employment but prior to the completion by the Company of all payments due them under this Agreement, the Company shall continue such payments to the Executive's beneficiary designated in writing to the Company prior to their death (or to their estate, if the Executive fails to make such designation).

12 Enforceability. If any portion or provision of this Agreement (including, without limitation, any portion or provision of any section of the Restrictive Covenant Agreement) shall to any extent be declared illegal or unenforceable by a court of competent jurisdiction, then the remainder of this Agreement, or the application of such portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, shall not be affected thereby, and each portion and provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

13. Survival. The provisions of this Agreement shall survive the termination of this Agreement and/or the termination of the Executive's employment to the extent necessary to effectuate the terms contained herein.

14. Waiver. No waiver of any provision hereof shall be effective unless made in writing and signed by the waiving party. The failure of any party to require the performance of any term or obligation of this Agreement, or the waiver by any party of any breach of this Agreement, shall not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

15. Notices. Any notices, requests, demands and other communications provided for by this Agreement shall be sufficient if in writing and delivered in person or sent by a nationally recognized overnight courier service or by registered or certified mail, postage prepaid, return receipt requested, to the Executive at the last address the Executive has filed in writing with the Company or, in the case of the Company, at its main offices, attention of the Board.

16. Amendment. This Agreement may be amended or modified only by a written instrument signed by the Executive and by a duly authorized representative of the Company.

17. Governing Law. This is a Massachusetts contract and shall be construed under and be governed in all respects by the laws of the Commonwealth of Massachusetts, without giving effect to the conflict of laws principles of such Commonwealth. With respect to any disputes concerning federal law, such disputes shall be determined in accordance with the law as it would be interpreted and applied by the United States Court of Appeals for the First Circuit.

18. Counterparts. This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be taken to be an original; but such counterparts shall together constitute one and the same document.

19. Successor to Company. The Company shall require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business or assets of the Company expressly to assume and agree to perform this Agreement to the same extent that the Company would be required to perform it if no succession had taken place. Failure of the Company to obtain an assumption of this Agreement at or prior to the effectiveness of any succession shall be a material breach of this Agreement.

20. Gender Neutral. Wherever used herein, a pronoun in the masculine gender shall be considered as including the feminine gender unless the context clearly indicates otherwise.

IN WITNESS WHEREOF, the parties have executed this Agreement effective on the date and year first above written.

BLUEBIRD BIO, INC.

By: /s/ Meredith Willoughby
Meredith Willoughby
Its: Sr. Director, Total Rewards, HRIS and Operations

/s/ Gina Consylman
Gina Consylman

Exhibit A

Restrictive Covenant Agreement

ASSIGNMENT OF INVENTION, NONDISCLOSURE, NONCOMPETITION AND NONSOLICITATION AGREEMENT

This Agreement is made between bluebird bio, Inc., a Delaware corporation (including its subsidiaries and other affiliates and its and their successors and assigns, hereinafter referred to as "bluebird bio" or the "Company''), and **Gina Consylman**, an employee or consultant of the Company (the "Service Provider").

In consideration of the employment of the Service Provider by the Company, the Company's promise to provide the Service Provider with items of bluebird bio Proprietary Information, specialized training and/or goodwill, and, as applicable, participation by the Service Provider in the Company's Sale Event Severance Plan, as additional consideration for signing this agreement, the Company and the Service Provider agree as follows:

1. Noncompetition; Nonsolicitation.

a. During the term of Service Provider's provision of services to the Company and for a period of (i) one year after the termination or cessation of such services for any reason or no reason (the "Last Date of Employment"), or (ii) two (2) years following the Last Date of Employment if he or she breaches his or her fiduciary duty to the Company or if he or she has unlawfully taken, physically or electronically, property belonging to the Company (in either case, the "Restricted Period"):

(I) Unless (A) the Company elects to terminate the Service Provider's employment without Cause (as defined below) or the Service Provider has been laid off; or (B) the Company elects to waive the restrictions upon post-employment activities set forth in this Section 1.a.(I), then, the Company shall make payments to the Service Provider for the post-employment portion of the Restricted Period (but for not more than 12 months following the Last Date of Employment) at the rate of 50% of the highest annualized base salary paid to the Service Provider by the Company within the two-year period preceding the Last Date of Employment, which the Service Provider acknowledges and agrees is consideration mutually agreed upon by the Company and the Service Provider, and in exchange, the Service Provider shall not directly or indirectly, whether as owner, partner, shareholder, director, manager, consultant, agent, employee, co-venturer or otherwise, anywhere in the geographic areas in which, at any time during the two years that immediately preceded the Last Date of Employment ("Two Year Lookback"), the Service Provider provided services or had a material presence or influence, provide any of the types of services that the Service Provider provided to the Company during the Two Year Lookback, in connection with any business that develops, manufactures or markets any products, or performs any services, that are competitive with the products or services of the Company, or products or services that the Company or its affiliates has under development or that are the subject of active planning at any time during the Service Provider's employment ("Restricted Activity"). For purposes of this Agreement, and notwithstanding anything to the contrary in any other agreement between the Company and the Service Provider, "Cause" shall mean a reasonable and good faith basis for the Company to be dissatisfied with the Service Provider's job

performance, conduct or behavior. The Service Provider acknowledges that this covenant is necessary because the Company's legitimate business interests cannot be adequately protected solely by the other covenants in this Agreement. The Service Provider further acknowledges and agrees that any payments the Service Provider receives pursuant to this Section 1.a.(I) shall reduce (and shall not be in addition to) any severance or separation pay that the Service Provider is otherwise entitled to receive from the Company pursuant to an agreement, plan or otherwise. Notwithstanding the foregoing, Service Provider shall have the right to own, for investment purposes, not more than one percent of the outstanding capital stock of a publicly held enterprise which competes with bluebird bio and nothing contained in this Section 1 shall prevent Service Provider from being employed by a university or nonprofit research institution.

(II) Service Provider will not solicit, entice or induce any employee or consultant of bluebird bio to terminate his or her employment or consultancy or engage in a Restricted Activity; and

(III) Service Provider will not solicit, entice or induce any vendor, customer or distributor of bluebird bio to terminate or materially diminish its relationship with bluebird bio.

b. Service Provider acknowledges and agrees that, in the event he/she breaches any of the terms described in Section 1.a.(II) or (III) above, the Restricted Period shall be tolled and shall not run during the time that Service Provider is in breach of such obligations; provided that, the Restricted Period shall begin to run again once Service Provider has ceased breaching the terms of Section 1.a.(II) or (III) and is otherwise in compliance with his/her obligations described therein.

c. Service Provider further acknowledges and agrees that (i) the types of employment which are prohibited by Section 1.a(I) are narrow and reasonable in relation to the skills which represent Service Provider's principal salable assets both to bluebird bio and to other prospective employers, and (ii) the geographical scope of the provisions of Section 1.a(I) is reasonable, legitimate and fair to Service Provider in light of the nature of the Company's business, the Company's need to market and sell its services and products in an appropriate manner and in light of the limited restrictions on the type of activity prohibited compared to the activities for which Service Provider is qualified to earn a livelihood.

d. Service Provider acknowledges and agrees that (i) the restrictions in Section 1.a are reasonable, legitimate, necessary and fair to Service Provider in light of the nature of the Company's business, the Company's need to market and sell its services and products in an appropriate manner and in light of the limited restrictions on the type of activity prohibited. Service Provider further acknowledges and agrees that any breach or threatened breach of this Agreement will cause irreparable injury to bluebird bio and that money damages may not provide an adequate remedy to bluebird bio. Service Provider therefore agrees that bluebird bio, in addition to any other remedies available to it, shall be entitled to preliminary and permanent injunctive relief against any breach or threatened breach by Service Provider of any of the provisions of this Agreement, without having to post bond. Service Provider further acknowledges that a court may render an award extending the Restricted Period as one of the remedies in the event of his or her violation of this Agreement. If the Service Provider violates this Agreement, in addition to all other remedies available to the Company at law (including, without limitation, the Company's right to discontinue any payments the Service Provider may receive pursuant to Section 1.a.(I)), in equity, and under contract, the Service Provider

agrees that he or she is obligated to pay all of the Company's costs of enforcement of this Agreement, including reasonable attorneys' fees and expenses.

2. Confidential Information.

a. Service Provider acknowledges and agrees to abide by bluebird bio's Confidentiality and Trade Secret Policies.

b. Service Provider acknowledges that bluebird bio would be irreparably damaged if Service Provider's confidential knowledge of the business of bluebird bio was disclosed to or utilized on behalf of others. Service Provider acknowledges that he or she has learned and will learn bluebird bio Proprietary Information, as defined in Section 2.b. hereof, relating to the business to be conducted by bluebird bio and its subsidiaries and joint ventures and partnerships to which bluebird bio may be a party (together, the "bluebird bio Entities"). Service Provider agrees that he or she will not, except in the normal and proper course of his or her employment or consultancy or as otherwise provided herein, disclose or use or enable anyone else to disclose or use, either during the term of this Agreement or subsequent thereto, any such bluebird bio Proprietary Information without prior written approval of bluebird bio. Service Provider further agrees to comply with all bluebird bio policies that govern the treatment of bluebird bio Proprietary Information and the reporting of any suspected violation of law, including but not limited to the Code of Business Conduct and Ethics, as such policies may be amended or revised from time to time. Service Provider acknowledges receipt of the following notice under 18 U.S.C § 1833(b)(1): "An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that (A) is made (i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal." In addition, nothing in this Agreement prohibits Service Provider from reporting an event that Service Provider reasonably and in good faith believes is a violation of law to the relevant law-enforcement agency (such as the Securities and Exchange Commission, Equal Employment Opportunity Commission, or Department of Labor), requires notice to or approval from the Company before doing so, or prohibits Service Provider from cooperating in an investigation conducted by such a government agency.

c. For the purpose of this Agreement, "bluebird bio Proprietary Information" shall mean all information, ideas, concepts, improvements, discoveries, and Inventions (defined in 3 a. below) that are both (i) disclosed or made known by bluebird bio to Service Provider, and (ii) identified as "proprietary" by bluebird bio to Service Provider (either orally or in writing) at the time of such disclosure or that should reasonably be known to be proprietary, including, but not limited to, the following types of information: corporate information, including contractual licensing arrangements, plans, strategies, tactics, policies, resolutions, and any litigation or negotiations; intellectual property, including patent applications, trademarks, trade secrets, and secret formulae; marketing information, including sales or product plans, strategies, tactics, methods, customers, prospects, or market research data; financial information, including cost and performance data, debt arrangements, equity structure, investors and holdings; operational information that relates to the technology that bluebird bio has or desires to develop or market, including control and inspection practices, manufacturing processes and methods, suppliers and parts; technical information, including machinery or device designs, drawings, specifications, processes, procedures, scientific or statistical data, research and

development information, scientific protocols, clinical data and preclinical data. bluebird bio Proprietary Information does not include information lawfully acquired by a non-management employee about wages, hours or other terms and conditions of employment when used for purposes protected by §7 of the National Labor Relations Act such as joining or forming a union, engaging in collective bargaining, or engaging in other concerted activity for mutual aid or protection of laborers. For purpose of clarity, it shall still be a violation of this Agreement for a non-management employee to share Confidential Information with a competitor about other employees' compensation and benefits which was obtained through the course of employment with the Company for purposes of assisting such competitor in soliciting Company employees.

d. Service Provider agrees that all documents of any nature provided by bluebird bio to Service Provider and pertaining to activities of any bluebird bio entity or to any bluebird bio Proprietary Information, in his or her possession now or at any time during the term of this Agreement, including without limitation memoranda, notebooks, notes, data sheets, records and blueprints, are and shall be the property of bluebird bio, and that they and all copies of them shall be surrendered to bluebird bio upon the earlier of request by bluebird bio or termination of this Agreement.

e. Service Provider shall have none of the obligations set forth above with respect to bluebird bio Proprietary Information (i) that is publicly known or becomes publicly known through no breach of this Agreement by Service Provider, (ii) that is generally or readily obtainable by the public, or within the scientific field, (iii) that is known by Service Provider prior to its disclosure to Service Provider by bluebird bio, as shown by Service Provider's written records, (iv) that Service Provider received from a source that had the legal right to disclose the information to Service Provider, (v) that is required to be disclosed by law, government regulation or court order, or (vi) involves information lawfully acquired by a non-management employee about wages, hours or other terms and conditions of employment when used for purposes protected by §7 of the National Labor Relations Act. Further, nothing herein limits, restricts, or in any other way affects Service Provider communicating with the SEC, the DOL, or any governmental agency or entity, or communicating with any official or staff person of a governmental agency or entity, or cooperating with or participating in a legal proceeding concerning matters relevant to the governmental agency or entity.

3. Intellectual Property.

a. Service Provider hereby assigns and agrees to assign to bluebird bio his or her entire right, title and interest in and to all Inventions. "Inventions" means improvements, modifications, know-how, processes, secrets and discoveries made, possessed, discovered or conceived by him or her during the period in which the Service Provider has provided services to the Company (whether or not patentable, whether or not reduced to practice, whether or not made, possessed, discovered or conceived by him or her individually or jointly with any other person or persons, whether made or conceived on or off bluebird bio's premises, and whether made in or out of working hours), which shall specifically or generally relate to, be applicable to or concern (a) development of therapeutics utilizing ex vivo or in vivo nucleic acid (*e.g.*, gene) transfer utilizing viral vector or virus-based approaches (*e.g.*, lentivirus), (b) methods of manufacturing viral vectors or genetically modified cells for the development of therapeutics, (c) approaches to facilitate proper homing or engraftment of genetically modified cells (d) gene editing, (e) cancer therapy, (f) rare genetic disease therapy, and (g) any other project, field, or line of business in which bluebird bio is engaged (collectively, the "Field"), such Inventions and benefits

hereof to immediately become the sole and absolute property of bluebird bio. In the event that any portion of this assignment is prohibited by the terms of a funding agreement under which the work resulting in any Invention was performed or the regulations of the institution where such work was performed (in the event such work was not performed by bluebird bio), Service Provider shall use his or her best efforts to obtain for bluebird bio a license or other consent to use such information on the most advantageous terms that are available to bluebird bio. Service Provider agrees that, upon the request of bluebird bio and at the expense of bluebird bio, Service Provider will execute such further assignments, documents, and other instruments as may be necessary or desirable fully and completely to assign all such Inventions to bluebird bio and to assist bluebird bio in applying for, obtaining, and enforcing patents or copyrights or other rights in the United States and in any foreign country with respect to any Invention. Service Provider shall keep and maintain adequate and current written records of all Inventions, in the form of notes, sketches, drawings or as may be specified by bluebird bio, which records shall be available to and remain the sole property of bluebird bio at all times. Service Provider acknowledges that bluebird bio from time to time may have agreements with other persons or with the United States Government, or agencies thereof, which impose obligations or restrictions on bluebird bio regarding Inventions made during the course of work under such agreements or regarding the confidential nature of such work. Service Provider agrees to be bound by all such obligations and restrictions which are made known to Service Provider and to take all action necessary to discharge the obligations of bluebird bio under such agreements.

b. This Agreement's assignment provisions are limited to only those Inventions that can be lawfully assigned by an employee to an employer under applicable law in the state where Service Provider last regularly resided while employed by the Company. Service Provider hereby acknowledges that Service Provider has been notified of the following laws governing the assignment of inventions: Del. Code Title 19 § 805; Ill. 765 ILCS1060/1-3, "Employees Patent Act"; N. C. Gen. Stat. Article 10A, Chp 66, Comm. & Bus., § 66-57.1; Minn. Stat. 13A § 181.78; Kan. Stat. § 44-130; Utah Code §34-39-1 -- 34-39-3, "Employee Inventions Act"; Wash. Rev. Code, Title 49 RCW: Lab. Reg. Chpt. 49.44.140; for example, if Service Provider resides in California, the assignment is limited to comply with Cal. Lab. Code § 2870 which provides: (a) Any provision in an employment agreement which provides that an employee shall assign, or offer to assign, any of his or her rights in an invention to his or her employer shall not apply to an invention that the employee developed entirely on his or her own time without using the employer's equipment, supplies, facilities, or trade secret information except for those inventions that either: (1) Relate at the time of conception or reduction to practice of the invention to the employer's business, or actual or demonstrably anticipated research or development of the employer; or (2) Result from any work performed by the employee for the employer. Service Provider will not, without the Company's prior written consent, incorporate into any Company product or otherwise deliver to the Company any software code that is subject to any license that by its terms requires, or conditions the use or distribution of such code on, the disclosure, licensing or distribution of such Company product or any source code owned or licensed by the Company (e.g., software code licensed under the GNU GPL, LGPL or AGPL.

4. Publication.

Anything to the contrary herein notwithstanding, Service Provider may not publish any bluebird bio Proprietary Information or information regarding Inventions, (as defined

above) of a scientific (as opposed to business or corporate) nature generated in the Field by Service Provider. Any clinical or research publication request must comport with bluebird bio's Scientific and Clinical Publication Review and Approval Process. In addition, Service Provider will cooperate with patent counsel for bluebird bio in effecting the intent of this Section by providing a copy of the text and/or data and any other information needed to file any patent applications or other appropriate materials to protect such information prior to any publication request.

5. Trade Secrets of Others/Obligations to Others.

   Service Provider represents that his or her other performance of all the terms of this Agreement does not and will not breach any agreement to keep in confidence proprietary information, knowledge or data acquired by him or her in confidence or in trust prior to his or her engagement by bluebird bio, and Service Provider agrees that he or she will not disclose to bluebird bio, or induce bluebird bio to use, any confidential or proprietary information or material belonging to any other person. Service Provider agrees that he or she will not enter into any agreement, either written or oral, in conflict with his or her obligations under this Agreement.

6. Survival

   The terms of this Agreement and Service Provider's obligations hereunder shall survive any termination of the Services Provider's employment, contractual or other business relationship with bluebird bio, irrespective of the reason or reasons for such termination. Nothing in this Agreement shall eliminate, reduce, or otherwise remove any legal duties or obligations that Service Provider would otherwise have to the Company through common law or statute.

7. Agreement Enforceable Upon Material Job Change.

   Service Provider acknowledges and agrees that if he or she should transfer between or among any affiliates of bluebird bio, wherever situated, or be promoted, demoted, reassigned to functions other than Service Provider's present functions, or have his/her job duties changed, altered or modified in any way, all terms of this Agreement shall continue to apply with full force.

8. Notice of Resignation.

   If the Service Provider elects to resign from his or her employment with the Company, the Service Provider agrees to provide the Company with written notification of his or her resignation at least two (2) weeks prior to the intended resignation date. Such notice shall include information in reasonable detail about his or her post-employment job duties and other business activities, including the name and address of any subsequent employer and/or person or entity with whom or which he or she intends to engage in business activities during the Restricted Period and the nature of his or her job duties and other business activities. The Company may elect to waive all or part of the two (2) week notice period in its sole discretion.

9. Disclosure to Future Employers.

   Service Provider agrees to provide, and the Company, in its discretion, may provide, a copy of this Agreement to any business or enterprise which Service Provider may directly or indirectly own, manage, operate, finance, join, control or in which Service Provider may participate in the ownership, management, operation, financing, or control, or with which Service Provider may be connected as an officer, director, employee, partner, principal, agent, representative, consultant or otherwise.

10. Modification.

This Agreement may not be changed, waived, modified, released, discharged, abandoned, or otherwise amended, in whole or in part, except by an instrument in writing signed by Service Provider and bluebird bio or as provided in Section 17 or Section 1(a)(I)(B), which waiver under Section 1(a)(I)(B) must be in writing. The failure of either party to require the performance of any term or obligation of this Agreement, or the waiver by either party of any breach of this Agreement, shall not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

11. Entire Agreement.

This Agreement constitutes the entire agreement and understanding between the parties hereto and supersedes any previous oral or written communications, representations, understandings, or agreements relating to the subject matter hereof; notwithstanding the foregoing, any Invention that was created prior to execution of this agreement shall also remain subject to the provisions of any intellectual property assignment provisions in existence between bluebird bio and Service Provider.

12. Successors and Assigns.

This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns (including, in the case of Service Provider, his or her heirs, executors, administrators and other legal representatives). Neither party hereto may assign any of its rights or obligations hereunder to any other person, except that bluebird bio may assign all of its rights and obligations under this Agreement to any person or entity controlled by, in control of, or under common control with, bluebird bio, or to any successor or assign of bluebird bio that employs Service Provider subsequent to his or her employment with bluebird bio.

13. Counterparts.

This Agreement may be signed in two counterparts, each of which shall be deemed an original and both of which shall together constitute one agreement.

14. Notices.

All notices, requests, consents and other communications required or permitted hereunder shall be in writing and shall be hand delivered or mailed by first-class mail postage prepaid, addressed as follows: If to bluebird bio, at bluebird bio, Inc., 60 Binney Street, Cambridge, MA 02142, Attention: Chief Legal Officer, or to such other address as may have been furnished to Service Provider by bluebird bio in writing as herein provided; or if to Service Provider, at the address set forth below his or her signature hereon, or to such other address as may have been furnished to bluebird bio by Service Provider as herein provided in writing. Any notice or other communication so addressed and so mailed shall be deemed to have been given when mailed, and if hand delivered shall be deemed to have been given when delivered.

15. Applicable Law.

This Agreement shall be deemed to have been made in the Commonwealth of Massachusetts, shall take effect as an instrument under seal within Massachusetts, and the validity, interpretation and performance of this Agreement shall be governed by, and construed in accordance with, the internal law of Massachusetts, without giving effect to conflict of law principles, and specifically excluding any conflict or choice of law rule or principle that might otherwise refer construction or interpretation of this Agreement to the substantive law of another jurisdiction. The parties acknowledge that the last act necessary to render this Agreement enforceable is its execution by the Company in Massachusetts, and that the Agreement shall be maintained in Massachusetts.

16. Jurisdiction, Venue, Service of Process and Jury Trial Waiver.

Any legal action or proceeding with respect to this Agreement must be brought in the courts of the Commonwealth of Massachusetts or in the United States District Court for the District of Massachusetts and shall be subject to the jurisdiction of such courts only. By execution and delivery of this Agreement, each of the parties hereto accepts for itself and in respect of its property, generally and unconditionally, the exclusive jurisdiction of the aforesaid courts and waive any objection to personal jurisdiction or venue in those courts; provided, however, the Company and the Service Provider agree that all civil actions relating to Section 1.a.(I) of this Agreement shall be brought in the county of Suffolk and that the superior court or the business litigation section of the superior court shall have exclusive jurisdiction. Any action, demand, claim or counterclaim arising under or relating to this Agreement will be resolved by a judge alone and each of the Company and the Service Provider waive any right to a jury trial thereof.

17. Severability.

The parties intend this Agreement to be enforced as written. However, (a) if any portion or provision of this Agreement is to any extent declared illegal or unenforceable by a duly-authorized court having jurisdiction, then the remainder of this Agreement, or the application of such portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, will not be affected thereby, and each portion and provision of this Agreement will be valid and enforceable to the fullest extent permitted by law, and (b) if any provision, or part thereof, is held to be unenforceable because of the duration of such provision or the geographic area covered thereby, the court making such determination will have the power to modify or reduce the scope, duration and/or geographic area of such provision, and/or to delete specific words and phrases ("blue-pencilling"), and in its modified, reduced or blue-pencilled form such provision will then be enforceable and will be enforced.

18. Use of Name or Affiliation.

bluebird bio shall not use Service Provider's name or affiliation, in publicity, advertising, or securities offering materials without the prior written approval of Service Provider, provided that such approval shall not be unreasonably withheld in cases in which bluebird bio is required by applicable law to disclose Service Provider's relationship with bluebird bio.

19. Employment At-Will.

This Agreement does not constitute a contract of employment for a definite period or imply that Service Provider's employment or engagement with the Company shall continue for any definite period of time. Employment with the Company is at-will meaning that the Service Provider or the Company may end the employment relationship at any time with or without notice or cause.

THE SERVICE PROVIDER ACKNOWLEDGES THAT HE OR SHE HAS CAREFULLY READ THIS ASSIGNMENT OF INVENTION, NONDISCLOSURE, NONCOMPETITION AND NONSOLICITATION AGREEMENT AND **Appendix A** and UNDERSTANDS AND AGREES TO ALL OF THE PROVISIONS IN THIS AGREEMENT. FURTHERMORE, BY SIGNING BELOW, THE SERVICE PROVIDER CERTIFIES THAT (I) HE OR SHE WAS PROVIDED WITH THIS AGREEMENT BY THE EARLIER OF A FORMAL OFFER OF EMPLOYMENT OR TEN (10) BUSINESS DAYS BEFORE THE COMMENCEMENT OF HIS OR HER EMPLOYMENT, AND (II) HE OR SHE HAS BEEN ADVISED BY THE COMPANY THAT HE OR SHE HAS THE RIGHT TO CONSULT WITH COUNSEL PRIOR TO SIGNING THIS AGREEMENT.

bluebird bio, Inc.

By:	/s/ Meredith Willoughby
Print Name:	Meredith Willoughby
Title:	Senior Director, Total Rewards, HRIS, Operations
Date:	1-June-2021

SERVICE PROVIDER

By:	/s/ Gina Consylman
Print Name:	Gina Consylman
Date:	1-June-2021

Attachment: Appendix A

APPENDIX A

Alabama:

If Service Provider resides in Alabama, and is subject to Alabama law, then the following applies to Service Provider for as long as Service Provider is subject to Alabama law: (i) Paragraph 1(a) shall be further limited to the solicitation or hiring of employees or consultants of the Company who are engaged in a Sensitive Position for the Company. A person is in a "Sensitive Position" if he or she is uniquely essential to the management, organization, or service of the Company's business; and (ii) Paragraph 1(a)(ii) shall be limited to solicitation of current customers, vendors, or distributors of the Company (i.e., past or inactive customers, vendors, or distributors are not covered by the provision).

Arizona:

If Service Provider resides in Arizona and is subject to Arizona law, then the following applies to Service Provider for as long as Service Provider is subject to Arizona law: the restrictions in Paragraph 1(a)(ii) shall be limited to the geographic region that Service Provider worked in, serviced, managed and/or supervised on behalf of the Company within the one (1) year period immediately preceding the termination of his employment.

California:

If Service Provider resides in California and is subject to California law, then the following applies to Service Provider for so long as Service Provider is subject to California law: (a) Paragraph 1(a)(ii) shall be limited to situations where Service Provider is aided in his or her conduct by the use or disclosure of the Company's trade secrets (as defined by applicable law); and (b) Paragraphs 14 and 15 shall not apply.

Louisiana:

If Service Provider resides in Louisiana and is subject to Louisiana law, then the following applies to Service Provider for as long as Service Provider is subject to Louisiana law: the restrictions in Paragraph 1(a)(ii) shall be limited to the following parishes in Louisiana and counties outside Louisiana:_____ [each individual Parish and/or County must be named].

Montana:

If Service Provider resides in Montana and is subject to Montana law, then the following applies to Service Provider for as long as Service Provider is subject to Montana law: the last sentence of Paragraph 18 shall not apply.

Nebraska:

If Service Provider resides in Nebraska and is subject to Nebraska law, then the following applies to Service Provider for so long as Service Provider is subject to Nebraska law: Paragraph 1(a)(ii) is further limited to the solicitation of customers, vendors, or distributors, with which

Service Provider did business on behalf of the Company and had personal business-related contact during the one (1) year period immediately preceding Service Provider's termination.

Nevada:

If Service Provider resides in Nevada and is subject to Nevada law, then the following applies to Service Provider for so long as Service Provider is subject to Nevada law: Paragraph 1(a)(ii) does not preclude Service Provider from providing services to any former customer of the Company if: (a) Service Provider did not solicit the former customer; (b) the customer voluntarily chose to leave and seek services from Service Provider; and (c) Service Provider is otherwise complying with the limitations in this Agreement as to time and scope of activity to be restrained.

New York:

If Service Provider resides in New York and is subject to New York law, then the following applies to Service Provider for so long as Service Provider is subject to New York law: Paragraph 1(a)(ii) shall be modified so that it excludes those customers who became a customer of Company as a result of Service Provider's independent contact and business development efforts with the customer prior to and independent from his/her employment with Company.

North Carolina:

If Service Provider resides in North Carolina and is subject to the laws of North Carolina, then the following applies to Service Provider for so long as Service Provider is subject to North Carolina law: the one (1) year look back period referenced in Paragraph 1(a) shall be calculated looking back one (1) year from the date of enforcement and not from the date employment ends.

North Dakota:

If Service Provider resides in North Dakota and is subject to North Dakota law, then the following applies to Service Provider for so long as Service Provider is subject to North Dakota law: Paragraph 1(a)(ii) shall be limited to situations where Service Provider is aided in his or her conduct by the use or disclosure of the Company's trade secrets (as defined by applicable law).

Wisconsin:

If Service Provider resides in Wisconsin and is subject to Wisconsin law, then the following applies to Service Provider for so long as Service Provider is subject to Wisconsin law: (a) Paragraph 9(g) shall not apply; and (b) Paragraph 5(b) shall be further limited to the solicitation or hiring of employees, independent contractors, sales agents, or sales associates of the Company who are engaged in a Sensitive Position for the Company. "Sensitive Position" refers to an employee of the Company who is in a management, supervisory, sales, research and development, or similar role where the employee is provided Confidential Information or is involved in business dealings with the Company's customers.

Exhibit 31.1

CERTIFICATIONS

I, Andrew Obenshain, 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, 2021

By: /s/ Andrew Obenshain

Andrew Obenshain
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Gina Consylman, 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, 2021

By: /s/ Gina Consylman

Gina Consylman
Chief Financial Officer
(Principal Financial Officer and Duly Authorized Signer)

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, 2021 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, 2021

By: /s/ Andrew Obenshain

Andrew Obenshain
President, Chief Executive Officer and Director
(Principal Executive Officer and Duly Authorized Signer)

Date: November 5, 2021

By: /s/ Gina Consylman

Gina Consylman
Chief Financial Officer
(Principal Financial Officer and Duly Authorized Signer)